Does financial market growth improve income distribution?

Paramati, Sudharshan Reddy; Thien Nguyen, Thanh Pham

Published in:
International Journal of Finance and Economics

DOI:
10.1002/ijfe.1683

Publication date:
2019

Document Version
Peer reviewed version

Does financial market growth improve income distribution? A comparison of developed and emerging market economies of the global sample

Sudharshan Reddy Paramati*
School of Business,
University of Dundee, DD1 4HN, United Kingdom
Email: s.paramati@dundee.ac.uk
***Corresponding author**

Thanh Pham Thien Nguyen
Business Department
James Cook University, 149 Sims Drive, Singapore 387380
Email: nguyen.thanh@jcu.edu.au

Note: This is an accepted version and will be published in the ***"International Journal of Finance and Economics".***

Does financial market growth improve income distribution? A comparison of developed and emerging market economies of the global sample

Abstract

The objective of this research is to investigate the effects of stock market indicators, banking, and FDI inflows on income inequalities in developed and emerging market economies around the world. For this reason, the study utilizes annual data that ranges from 1981 to 2014 on the selected indicators. Given the nature of our variables, we employ panel autoregressive distributed lag (ARDL) models to explore the long-run estimates of income inequalities. The long-run estimates indicate that the stock market indicators have significant positive and negative impact on income inequalities in developed and emerging market economies, respectively. Further, our findings show that the banking credit adversely affects income inequalities both in developed and emerging economies. Our results also establish significant short-run causalities among stock market indicators and income inequalities. Given these findings, we argue that the stock markets are playing an important role in reducing income inequalities in emerging economies while they contribute for higher inequalities in developed economies.

JEL classification: C23, D63, O16, O57

Keywords: Stock market indicators; Banking credit; FDI inflows; income inequalities; developed-emerging market economies; panel ARDL

1. Introduction

Income inequality across most countries has been rising over the past two decades { ADDIN EN.CITE { ADDIN EN.CITE.DATA }}. The increase in income inequality could dampen global economic growth and accelerate unemployment rate { ADDIN EN.CITE <EndNote><Cite><Author>Dabla-Norris</Author><Year>2015</Year><RecNum>1134</RecNum><DisplayText>(Dabla-Norris et al., 2015)</DisplayText><record><rec-number>1134</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1495241530">1134</key></foreign-keys><ref-type name="Book">6</ref-type><contributors><authors><author>Dabla-Norris, Ms Era</author><author>Kochhar, Ms Kalpana</author><author>Suphaphiphat, Mrs Nujin</author><author>Ricka, Mr Frantisek</author><author>Tsounta, Evridiki</author></authors></contributors><titles><title>Causes and consequences of income inequality: a global perspective</title></titles><dates><year>2015</year></dates><publisher>International Monetary Fund Staff Discussion Notes SDN/15/13</publisher><isbn>1513544373</isbn><urls></urls></record></Cite></EndNote> }, therefore fighting against income inequality has been at the central of the development policies in both developed and developing countries. To fight for an improvement of income distribution, understanding the determinants of income inequality is fundamental to form policy measures. Trade and financial globalisation { ADDIN EN.CITE <EndNote><Cite><Author>Gozgor</Author><Year>2017</Year><RecNum>1213</RecNum><DisplayText>(Jaumotte et al., 2013; Gozgor & Ranjan, 2017)</DisplayText><record><rec-

number>1213</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1533880819">1213</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Gozgor, Giray</author><author>Ranjan, Priya</author></authors></contributors><titles><title>Globalisation, inequality and redistribution: Theory and evidence</title><secondary-title>The World Economy</secondary-title></titles><periodical><full-title>The World Economy</full-title></periodical><pages>2704-2751</pages><volume>40</volume><number>12</number><dates><year>2017</year></dates><publisher>Wiley Online Library</publisher><isbn>0378-5920</isbn><urls></urls></record></Cite><Cite><Author>Jaumotte</Author><Year>2013</Year><RecNum>1214</RecNum><record><rec-number>1214</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1533882318">1214</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Jaumotte, Florence</author><author>Lall, Subir</author><author>Papageorgiou, Chris</author></authors></contributors><titles><title>Rising income inequality: technology, or trade and financial globalization?</title><secondary-title>IMF Economic Review</secondary-title></titles><periodical><full-title>IMF Economic Review</full-title></periodical><pages>271-309</pages><volume>61</volume><number>2</number><dates><year>2013</year></dates><publisher>Springer</publisher><isbn>2041-

4161</isbn><urls></urls></record></Cite></EndNote> **}** and technological change **{** ADDIN EN.CITE

<EndNote><Cite><Author>Jaumotte</Author><Year>2013</Year><RecNum>1214</RecNum><DisplayText>(Jaumotte et al., 2013)</DisplayText><record><rec-number>1214</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1533882318">1214</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Jaumotte, Florence</author><author>Lall, Subir</author><author>Papageorgiou, Chris</author></authors></contributors><titles><title>Rising income inequality: technology, or trade and financial globalization?</title><secondary-title>IMF Economic Review</secondary-title></titles><periodical><full-title>IMF Economic Review</full-title></periodical><pages>271-309</pages><volume>61</volume><number>2</number><dates><year>2013</year></dates><publisher>Springer</publisher><isbn>2041-4161</isbn><urls></urls></record></Cite></EndNote>**}** have been found to be responsible for the rise of income inequality. It is mainly because the modern technology substitutes for many jobs and tasks which traditionally performed by unskilled workers, and globalisation has also enabled vast salaries and profits to be shared among a narrow set of employees and shareholders of market winners. However, they cannot be used as tools for reducing income equality as they are essential for economic and social development and life quality improvement **{** ADDIN EN.CITE **{** ADDIN EN.CITE.DATA **}}**. Meanwhile, financial development can be a flexible tool to fight for even income distribution, since access to financial services is critical for individuals' productivity and welfare **{** ADDIN EN.CITE

<EndNote><Cite><Author>Claessens</Author><Year>2007</Year><RecNum>936</RecNum><DisplayText>(Claessens & Perotti, 2007)</DisplayText><record><rec-number>936</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1474002409">936</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Claessens, Stijn</author><author>Perotti, Enrico</author></authors></contributors><titles><title>Finance and inequality: Channels and evidence</title><secondary-title>Journal of Comparative Economics</secondary-title></titles><periodical><full-title>Journal of Comparative Economics</full-title></periodical><pages>748-773</pages><volume>35</volume><number>4</number><dates><year>2007</year></dates><isbn>0147-5967</isbn><urls></urls></record></Cite></EndNote>**}**. This makes it interesting to study the impact of financial development on income inequality.

Financial development has been historically captured by domestic credit provided by banking sector (i.e., banking development). Although there is a consensus of the role of banking development as an engine of economic growth **{** ADDIN EN.CITE **{** ADDIN EN.CITE.DATA **}}**, and empirical studies document mixed findings of the effect of banking development on income inequality. This mixed impact could be due to whether the rich or the poor can benefit more from banking credit allocation **{** ADDIN EN.CITE **{** ADDIN EN.CITE.DATA **}}**. Moreover, financial system has two main components: stock market and the banking system. Going public allows firms to access more financial capital that can fuel investment and innovation **{** ADDIN EN.CITE <EndNote><Cite><Author>Wies</Author><Year>2015</Year><RecNum>1010</RecNum><DisplayText>(Wies & Moorman, 2015)</DisplayText><record><rec-number>1010</rec-

number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477104849">1010</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Wies, Simone</author><author>Moorman, Christine</author></authors></contributors><titles><title>Going public: how stock market listing changes firm innovation behavior</title><secondary-title>Journal of Marketing Research</secondary-title></titles><periodical><full-title>Journal of Marketing Research</full-title></periodical><pages>694-709</pages><volume>52</volume><number>5</number><dates><year>2015</year></dates><isbn>0022-2429</isbn><urls></urls></record></Cite></EndNote> **}** and then influence the unemployment and the distribution of income. A number of studies have explored the nexus between financial development and income inequality, but financial development in these studies is mostly captured by the banking development, while stock market development is usually ignored, though the growth of stock markets have been very impressive during the last few decades. In addition, in wealthy nations, stock markets are large, stable and liquid **{** ADDIN EN.CITE <EndNote><Cite><Author>Choong</Author><Year>2010</Year><RecNum>1140</RecNum><DisplayText>(Singh, 2008; Choong et al., 2010)</DisplayText><record><rec-number>1140</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1500175523">1140</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Choong, Chee-Keong</author><author>Baharumshah, Ahmad Zubaidi</author><author>Yusop, Zulkornain</author><author>Habibullah, Muzafar

Shah</author></authors></contributors><titles><title>Private capital flows, stock market and economic growth in developed and developing countries: A comparative analysis</title><secondary-title>Japan and the World Economy</secondary-title></titles><periodical><full-title>Japan and the World Economy</full-title></periodical><pages>107-117</pages><volume>22</volume><number>2</number><dates><year>2010</year></dates><publisher>Elsevier</publisher><isbn>0922-1425</isbn><urls></urls></record></Cite><Cite><Author>Singh</Author><Year>2008</Year><RecNum>1142</RecNum><record><rec-number>1142</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1500183148">1142</key></foreign-keys><ref-type name="Book">6</ref-type><contributors><authors><author>Singh, Ajit</author></authors></contributors><titles><title>Stock markets in low and middle income countries</title></titles><dates><year>2008</year></dates><publisher>Centre for Business Research, University of Cambridge</publisher><urls></urls></record></Cite></EndNote>**}** and concentrated by some industrialized companies which tend to produce technology-intensive products and hence rely more on skilled workers. Therefore, the stock market development in developed countries may widen the income gap between the rich and the poor. On the other hand, the stock markets in developing countries, although have low liquidity and market capitalization **{** ADDIN EN.CITE <EndNote><Cite><Author>Singh</Author><Year>2008</Year><RecNum>1142</RecNum><DisplayText>(Singh, 2008)</DisplayText><record><rec-number>1142</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt"

timestamp="1500183148">1142</key></foreign-keys><ref-type name="Book">6</ref-type><contributors><authors><author>Singh, Ajit</author></authors></contributors><titles><title>Stock markets in low and middle income countries</title></titles><dates><year>2008</year></dates><publisher>Centre for Business Research, University of Cambridge</publisher><urls></urls></record></Cite></EndNote>**}**, is a place for listed firms to raise financial capital to diversify or expand their business. Nevertheless, a majority of these listed firms lack access to technology and rely on low-cost unskilled workers to produce labour-intensive products, and hence the stock market development in developing countries may narrow the income gap between the rich and the poor. Given this background and knowledge gap in the existing literature, this study aims to investigate and compare the effect of financial development, including stock market and banking development, on income inequality in developed and emerging economies. This study also examines the role of FDI inflows on income inequality as FDI inflows tend to mitigate unemployment problem of both types of labour: skilled and unskilled **{** ADDIN EN.CITE **{** ADDIN EN.CITE.DATA **}}**.

This study measures stock market development by three stock market indicators: market capitalization, turnover ratio and total value traded; and banking development is measured through the domestic credit to the private sector by the banks. The study considers 20 developed, and 18 emerging economies and uses annual data from 1981 to 2014. Our study employs two robust panel econometric techniques such as the autoregressive distributed lag (ARDL) model, and heterogeneous panel non-causality test to see the role of stock markets and banking credit on income inequalities in these two groups of economies. The panel ARDL method provides results on long-run income inequality elasticities, while non-causality test helps in identifying the

direction of causality among the variables in the short-run. Given the significance of these models, the findings derived from these techniques will be more robust and reliable.

Our long-run empirical findings, based on panel ARDL method, establish that the growth in stock market indicators significantly increase income inequality, while banking credit reduces. On the other hand, the growths in stock markets and banking credit play an important role to decrease income inequality in developing economies. The results of short-run causalities indicate that the stock market indicator Granger causes income inequalities in developed economies, while we find feedback relationship between stock market indicators and income inequalities in emerging economies. Given that our study makes significant contributions to the policy and to the body of knowledge. More specifically, the study adds a considerable value to the policy in terms of understanding the role that stock markets play on income inequalities across the developed and emerging market economies. Therefore, these findings will be critical for the policy makers to formulate appropriate policy measures to reduce the income inequality. For instance, emerging economies might continue to develop their stock markets and banking sector, while developed economies might specifically focus on the expansion of banking industry. Further, the study utilizes the most updated data, 1981 to 2014, a period with significant reforms implemented across the financial markets of developed and emerging economies, which were aimed for easy capital mobilization, and improving capital allocation to the poor and small firms. Finally, this study employs robust panel econometric techniques such as the panel ARDL and heterogeneous non-causality test to achieve the study objectives. Given all of these, the present study adds significant value to the existing empirical literature.

The rest of this study is organized as follows. Section 2 presents a review of the literature on the effects of financial market development, including stock market development, on income

inequality. Section 3 discusses the nature of data, research methodology, and preliminary findings. Section 4 reports empirical findings, detailed discussion and provides policy implications. Finally, the summary of results and concluding remarks are discussed in section 5.

2. Literature review

2.1 The effect of financial development on income inequality

A number of empirical studies examine the effect of financial development on income inequality. However, the findings of these studies reveal no consensus on this effect. For instance, the empirical findings of { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Beck</Author><Year>2007</Year><RecNum>984</RecNum><DisplayText>Beck, Demirgüç-Kunt, et al. (2007)</DisplayText><record><rec-number>984</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476677350">984</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Beck, Thorsten</author><author>Demirgüç-Kunt, Asli</author><author>Levine, Ross</author></authors></contributors><titles><title>Finance, inequality and the poor</title><secondary-title>Journal of economic growth</secondary-title></titles><periodical><full-title>Journal of Economic Growth</full-title></periodical><pages>27-49</pages><volume>12</volume><number>1</number><dates><year>2007</year></dates><isbn>1381-4338</isbn><urls></urls></record></Cite></EndNote> } , { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Hamori</Author><Year>2012</Year><RecNum>1012</RecNum><DisplayText>Hamori and Hashiguchi (2012)</DisplayText><record><rec-number>1012</rec-

number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477109009">1012</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Hamori, Shigeyuki</author><author>Hashiguchi, Yoshihiro</author></authors></contributors><titles><title>The effect of financial deepening on inequality: Some international evidence</title><secondary-title>Journal of Asian Economics</secondary-title></titles><periodical><full-title>Journal of Asian Economics</full-title></periodical><pages>353-359</pages><volume>23</volume><number>4</number><keywords><keyword>Financial deepening</keyword><keyword>Inequality</keyword><keyword>Equalizing effect</keyword><keyword>Dynamic GMM</keyword></keywords><dates><year>2012</year><pub-dates><date>8//</date></pub-dates></dates><isbn>1049-0078</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S1049007812000024</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.asieco.2011.12.001</electronic-resource-num></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Agnello</Author><Year>2012</Year><RecNum>997</RecNum><DisplayText>Agnello et al. (2012)</DisplayText><record><rec-number>997</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476803009">997</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Agnello, Luca</author><author>Mallick, Sushanta K</author><author>Sousa, Ricardo

M</author></authors></contributors><titles><title>Financial reforms and income inequality</title><secondary-title>Economics Letters</secondary-title></titles><periodical><full-title>Economics Letters</full-title></periodical><pages>583-587</pages><volume>116</volume><number>3</number><dates><year>2012</year></dates><isbn>0165-1765</isbn><urls></urls></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Li</Author><Year>2014</Year><RecNum>1013</RecNum><DisplayText>Li and Yu (2014)</DisplayText><record><rec-number>1013</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477110398">1013</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Li, Jie</author><author>Yu, Han</author></authors></contributors><titles><title>Income inequality and financial reform in Asia: the role of human capital</title><secondary-title>Applied Economics</secondary-title></titles><periodical><full-title>Applied economics</full-title></periodical><pages>2920-2935</pages><volume>46</volume><number>24</number><dates><year>2014</year></dates><isbn>0003-6846</isbn><urls></urls></record></Cite></EndNote>**}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Johansson</Author><Year>2014</Year><RecNum>985</RecNum><DisplayText>Johansson and Wang (2014)</DisplayText><record><rec-number>985</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476678159">985</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Johansson, Anders C</author><author>Wang, Xun</author></authors></contributors><titles><title>Financial

sector policies and income inequality</title><secondary-title>China Economic Review</secondary-title></titles><periodical><full-title>China Economic Review</full-title></periodical><pages>367-378</pages><volume>31</volume><dates><year>2014</year></dates><isbn>1043-951X</isbn><urls></urls></record></Cite></EndNote>**}** reveal that the financial development contributes to equal income distribution. More specifically, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Beck</Author><Year>2007</Year><RecNum>984</RecNum><DisplayText>Beck, Demirgüç-Kunt, et al. (2007)</DisplayText><record><rec-number>984</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476677350">984</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Beck, Thorsten</author><author>Demirgüç-Kunt, Asli</author><author>Levine, Ross</author></authors></contributors><titles><title>Finance, inequality and the poor</title><secondary-title>Journal of economic growth</secondary-title></titles><periodical><full-title>Journal of Economic Growth</full-title></periodical><pages>27-49</pages><volume>12</volume><number>1</number><dates><year>2007</year></dates><isbn>1381-4338</isbn><urls></urls></record></Cite></EndNote>**}** establish that the financial development (banking credit) positively and significantly boosts the share of income received by the poorest quintile, which lowers income inequality in 72 developing and developed countries over the period 1960–2005. **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Hamori</Author><Year>2012</Year><RecNum>1012</RecNum><DisplayText>Hamori and Hashiguchi (2012)</DisplayText><record><rec-number>1012</rec-

number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477109009">1012</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Hamori, Shigeyuki</author><author>Hashiguchi, Yoshihiro</author></authors></contributors><titles><title>The effect of financial deepening on inequality: Some international evidence</title><secondary-title>Journal of Asian Economics</secondary-title></titles><periodical><full-title>Journal of Asian Economics</full-title></periodical><pages>353-359</pages><volume>23</volume><number>4</number><keywords><keyword>Financial deepening</keyword><keyword>Inequality</keyword><keyword>Equalizing effect</keyword><keyword>Dynamic GMM</keyword></keywords><dates><year>2012</year><pub-dates><date>8//</date></pub-dates></dates><isbn>1049-0078</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S1049007812000024</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.asieco.2011.12.001</electronic-resource-num></record></Cite></EndNote>**}** gauge income inequality through household wage inequality, and capture financial development through banking credit and broad money supply. Utilizing a more comprehensive data set, which is from 1963 to 2002 on 126 countries, they confirm that the financial development (both indicators) reduces income inequality by raising the real income of the poor much more than the rich, proportionally.

The above two studies capture the development of financial market by only looking at the banking credit to the private sector. Different from the above studies, **{** ADDIN EN.CITE <EndNote><Cite

AuthorYear="1"><Author>Li</Author><Year>2014</Year><RecNum>1013</RecNum><DisplayText>Li and Yu (2014)</DisplayText><record><rec-number>1013</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477110398">1013</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Li, Jie</author><author>Yu, Han</author></authors></contributors><titles><title>Income inequality and financial reform in Asia: the role of human capital</title><secondary-title>Applied Economics</secondary-title></titles><periodical><full-title>Applied economics</full-title></periodical><pages>2920-2935</pages><volume>46</volume><number>24</number><dates><year>2014</year></dates><isbn>0003-6846</isbn><urls></urls></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Agnello</Author><Year>2012</Year><RecNum>997</RecNum><DisplayText>Agnello et al. (2012)</DisplayText><record><rec-number>997</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476803009">997</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Agnello, Luca</author><author>Mallick, Sushanta K</author><author>Sousa, Ricardo M</author></authors></contributors><titles><title>Financial reforms and income inequality</title><secondary-title>Economics Letters</secondary-title></titles><periodical><full-title>Economics Letters</full-title></periodical><pages>583-587</pages><volume>116</volume><number>3</number><dates><year>2012</year></dates><isbn>0165-1765</isbn><urls></urls></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite

AuthorYear="1"><Author>Johansson</Author><Year>2014</Year><RecNum>985</RecNum><DisplayText>Johansson and Wang (2014)</DisplayText><record><rec-number>985</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476678159">985</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Johansson, Anders C</author><author>Wang, Xun</author></authors></contributors><titles><title>Financial sector policies and income inequality</title><secondary-title>China Economic Review</secondary-title></titles><periodical><full-title>China Economic Review</full-title></periodical><pages>367-378</pages><volume>31</volume><dates><year>2014</year></dates><isbn>1043-951X</isbn><urls></urls></record></Cite></EndNote>} capture financial development using financial reforms or financial repression in both banking and equity markets. They investigate the effects of financial development on income distribution using an aggregate financial reform/repression index and seven individual financial reform/repression indices. As for an aggregate financial reform/repression index, they all confirm that financial development, in general, can promote an equal distribution of income. As for individual financial reform/repression indices, { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Li</Author><Year>2014</Year><RecNum>1013</RecNum><DisplayText>Li and Yu (2014)</DisplayText><record><rec-number>1013</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477110398">1013</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Li, Jie</author><author>Yu, Han</author></authors></contributors><titles><title>Income inequality and financial reform in

Asia: the role of human capital</title><secondary-title>Applied Economics</secondary-title></titles><periodical><full-title>Applied economics</full-title></periodical><pages>2920-2935</pages><volume>46</volume><number>24</number><dates><year>2014</year></dates><isbn>0003-6846</isbn><urls></urls></record></Cite></EndNote>} observe that lift of credit control and better banking supervision are significantly associated with reduction of income inequality. Similarly, { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Agnello</Author><Year>2012</Year><RecNum>997</RecNum><DisplayText>Agnello et al. (2012)</DisplayText><record><rec-number>997</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476803009">997</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Agnello, Luca</author><author>Mallick, Sushanta K</author><author>Sousa, Ricardo M</author></authors></contributors><titles><title>Financial reforms and income inequality</title><secondary-title>Economics Letters</secondary-title></titles><periodical><full-title>Economics Letters</full-title></periodical><pages>583-587</pages><volume>116</volume><number>3</number><dates><year>2012</year></dates><isbn>0165-1765</isbn><urls></urls></record></Cite></EndNote>} report that the removal of subsidized directed credit and excessively high reserve requirements help to promote a more equal distribution of income. While, { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Johansson</Author><Year>2014</Year><RecNum>985</RecNum><DisplayText>Johansson and Wang (2014)</DisplayText><record><rec-number>985</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476678159">985</key></foreign-keys><ref-type name="Journal

Article">17</ref-type><contributors><authors><author>Johansson, Anders C</author><author>Wang, Xun</author></authors></contributors><titles><title>Financial sector policies and income inequality</title><secondary-title>China Economic Review</secondary-title></titles><periodical><full-title>China Economic Review</full-title></periodical><pages>367-378</pages><volume>31</volume><dates><year>2014</year></dates><isbn>1043-951X</isbn><urls></urls></record></Cite></EndNote> **}** find that the relaxation of credit controls, entry barriers in the financial sector, banking supervision, and state ownership in the banking sector contribute to improve the income distribution.

Some empirical studies find that financial development either increases income inequality or have no effect on income distribution, example of those studies are **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Roine</Author><Year>2009</Year><RecNum>1014</RecNum><DisplayText>Roine et al. (2009)</DisplayText><record><rec-number>1014</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477663949">1014</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Roine, Jesper</author><author>Vlachos, Jonas</author><author>Waldenström, Daniel</author></authors></contributors><titles><title>The long-run determinants of inequality: What can we learn from top income data?</title><secondary-title>Journal of Public Economics</secondary-title></titles><periodical><full-title>Journal of Public Economics</full-title></periodical><pages>974-988</pages><volume>93</volume><number>7</number><dates><year>2009</year></dates>

<isbn>0047-2727</isbn><urls></urls></record></Cite></EndNote> } , { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Jerzmanowski</Author><Year>2013</Year><RecNum>1011</RecNum><DisplayText>Jerzmanowski and Nabar (2013)</DisplayText><record><rec-number>1011</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477107880">1011</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Jerzmanowski, Michal</author><author>Nabar, Malhar</author></authors></contributors><titles><title>Financial development and wage inequality: Theory and evidence</title><secondary-title>Economic Inquiry</secondary-title></titles><periodical><full-title>Economic Inquiry</full-title></periodical><pages>211-234</pages><volume>51</volume><number>1</number><dates><year>2013</year></dates><isbn>1465-7295</isbn><urls></urls></record></Cite></EndNote> } , { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Lo Prete</Author><Year>2013</Year><RecNum>1152</RecNum><DisplayText>Lo Prete (2013)</DisplayText><record><rec-number>1152</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1500355354">1152</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lo Prete, Anna</author></authors></contributors><titles><title>Economic literacy, inequality, and financial development</title><secondary-title>Economics Letters</secondary-title></titles><periodical><full-title>Economics Letters</full-title></periodical><pages>74-

76</pages><volume>118</volume><number>1</number><keywords><keyword>Inequality</keyword><keyword>Financial market participation</keyword><keyword>Economic competences</keyword></keywords><dates><year>2013</year><pub-dates><date>2013/01/01/</date></pub-dates></dates><isbn>0165-1765</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S0165176512005368</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.econlet.2012.09.029</electronic-resource-num></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Seven</Author><Year>2016</Year><RecNum>919</RecNum><DisplayText>Seven and Coskun (2016)</DisplayText><record><rec-number>919</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1473993728">919</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Seven, Unal</author><author>Coskun, Yener</author></authors></contributors><titles><title>Does financial development reduce income inequality and poverty? Evidence from emerging countries</title><secondary-title>Emerging Markets Review</secondary-title></titles><periodical><full-title>Emerging Markets Review</full-title></periodical><pages>34-63</pages><volume>26</volume><dates><year>2016</year></dates><isbn>1566-0141</isbn><urls></urls></record></Cite></EndNote>**}**, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Jauch</Author><Year>2016</Year><RecNum>1210</RecNum><DisplayText>Jauch and Watzka (2016)</DisplayText><record><rec-number>1210</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1533799632">1210</key></foreign-keys><ref-type name="Journal

Article">17</ref-type><contributors><authors><author>Jauch, Sebastian</author><author>Watzka, Sebastian</author></authors></contributors><titles><title>Financial development and income inequality: a panel data approach</title><secondary-title>Empirical Economics</secondary-title></titles><periodical><full-title>Empirical Economics</full-title></periodical><pages>291-314</pages><volume>51</volume><number>1</number><dates><year>2016</year></dates><publisher>Springer</publisher><isbn>0377-7332</isbn><urls></urls></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Christopoulos</Author><Year>2017</Year><RecNum>1002</RecNum><DisplayText>Christopoulos and McAdam (2017)</DisplayText><record><rec-number>1002</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476958934">1002</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Christopoulos, Dimitris</author><author>McAdam, Peter</author></authors></contributors><titles><title>Do financial reforms help stabilize inequality?</title><secondary-title>Journal of International Money and Finance</secondary-title></titles><periodical><full-title>Journal of International Money and Finance</full-title></periodical><pages>45-61</pages><volume>70</volume><dates><year>2017</year></dates><isbn>0261-5606</isbn><urls></urls></record></Cite></EndNote>**}**. More specifically, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Roine</Author><Year>2009</Year><RecNum>1014</RecNum><

DisplayText>Roine et al. (2009)</DisplayText><record><rec-number>1014</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477663949">1014</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Roine, Jesper</author><author>Vlachos, Jonas</author><author>Waldenström, Daniel</author></authors></contributors><titles><title>The long-run determinants of inequality: What can we learn from top income data?</title><secondary-title>Journal of Public Economics</secondary-title></titles><periodical><full-title>Journal of Public Economics</full-title></periodical><pages>974-988</pages><volume>93</volume><number>7</number><dates><year>2009</year></dates><isbn>0047-2727</isbn><urls></urls></record></Cite></EndNote> **}** explore the effect of financial development on income inequality in 16 countries over the period 1900-2000. This study uses three different measures of financial development: bank deposits to GDP, stock market capitalization to GDP, and total market capitalization; and three income variables to capture income distribution: the rich, the upper middle class, and the rest of the population. The results show that financial development is positively associated with income inequality, but this association seems to depend on the degree of economic development. Similarly, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Jerzmanowski</Author><Year>2013</Year><RecNum>1011</RecNum><DisplayText>Jerzmanowski and Nabar (2013)</DisplayText><record><rec-number>1011</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477107880">1011</key></foreign-keys><ref-type name="Journal

Article">17</ref-type><contributors><authors><author>Jerzmanowski, Michal</author><author>Nabar, Malhar</author></authors></contributors><titles><title>Financial development and wage inequality: Theory and evidence</title><secondary-title>Economic Inquiry</secondary-title></titles><periodical><full-title>Economic Inquiry</full-title></periodical><pages>211-234</pages><volume>51</volume><number>1</number><dates><year>2013</year></dates><isbn>1465-7295</isbn><urls></urls></record></Cite></EndNote> **}** examine the effect of financial development on income inequality by focusing on banking deregulation in the US during 1977 – 2006. Authors confirm that financial development increases income inequality by raising wages of high skilled labor, while reducing wages for low skilled labour. **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Jauch</Author><Year>2016</Year><RecNum>1210</RecNum><DisplayText>Jauch and Watzka (2016)</DisplayText><record><rec-number>1210</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1533799632">1210</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Jauch, Sebastian</author><author>Watzka, Sebastian</author></authors></contributors><titles><title>Financial development and income inequality: a panel data approach</title><secondary-title>Empirical Economics</secondary-title></titles><periodical><full-title>Empirical Economics</full-title></periodical><pages>291-314</pages><volume>51</volume><number>1</number><dates><year>2016</year></dates><publisher>Springer</publisher><isbn>0377-7332</isbn><urls></urls></record></Cite></EndNote>**}** use private credit over GDP as a proxy

for financial development, the gross Gini as a proxy for income inequality. By controlling for country fixed effects, possible endogeneity problems, GDP per capita and other control variables, they find that financial development increases income inequality.

{ ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Seven</Author><Year>2016</Year><RecNum>919</RecNum><DisplayText>Seven and Coskun (2016)</DisplayText><record><rec-number>919</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1473993728">919</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Seven, Unal</author><author>Coskun, Yener</author></authors></contributors><titles><title>Does financial development reduce income inequality and poverty? Evidence from emerging countries</title><secondary-title>Emerging Markets Review</secondary-title></titles><periodical><full-title>Emerging Markets Review</full-title></periodical><pages>34-63</pages><volume>26</volume><dates><year>2016</year></dates><isbn>1566-0141</isbn><urls></urls></record></Cite></EndNote>} develop three aggregate measures such as i) bank development by using five indicators of banks, ii) stock market development by using three indicators of stock market, and iii) the overall financial development by using both bank and stock market development indicators. Utilizing 45 emerging countries from 1987 to 2011, the authors report that bank development increases income inequality (measured by Gini coefficient), but stock market development is not significantly related to income inequality, leading to insignificant contribution of overall financial development to income distribution. This finding is consistent with the study of { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Christopoulos</Author><Year>2017</Year><RecNum>1002</Rec

Num><DisplayText>Christopoulos and McAdam (2017)</DisplayText><record><rec-number>1002</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476958934">1002</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Christopoulos, Dimitris</author><author>McAdam, Peter</author></authors></contributors><titles><title>Do financial reforms help stabilize inequality?</title><secondary-title>Journal of International Money and Finance</secondary-title></titles><periodical><full-title>Journal of International Money and Finance</full-title></periodical><pages>45-61</pages><volume>70</volume><dates><year>2017</year></dates><isbn>0261-5606</isbn><urls></urls></record></Cite></EndNote>**}**, who find that financial development (measured by seven banking and security reforms) has no considerable role in reducing income inequality in 91 economies over 1973–2005. Likewise, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Lo Prete</Author><Year>2013</Year><RecNum>1152</RecNum><DisplayText>Lo Prete (2013)</DisplayText><record><rec-number>1152</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1500355354">1152</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lo Prete, Anna</author></authors></contributors><titles><title>Economic literacy, inequality, and financial development</title><secondary-title>Economics Letters</secondary-title></titles><periodical><full-title>Economics Letters</full-title></periodical><pages>74-76</pages><volume>118</volume><number>1</number><keywords><keyword>Inequality</k

eyword><keyword>Financial market participation</keyword><keyword>Economic competences</keyword></keywords><dates><year>2013</year><pub-dates><date>2013/01/01/</date></pub-dates></dates><isbn>0165-1765</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S0165176512005368</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.econlet.2012.09.029</electronic-resource-num></record></Cite></EndNote> **}** establishes no significant association between financial development and income inequality in a sample of 30 countries.

{ ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Law</Author><Year>2009</Year><RecNum>938</RecNum><DisplayText>Law and Tan (2009)</DisplayText><record><rec-number>938</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1474003012">938</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Law, Siong Hook</author><author>Tan, Hui Boon</author></authors></contributors><titles><title>The role of financial development on income inequality in Malaysia</title><secondary-title>Journal of Economic Development</secondary-title></titles><periodical><full-title>Journal of Economic Development</full-title></periodical><pages>153</pages><volume>34</volume><number>2</number><dates><year>2009</year></dates><isbn>0254-8372</isbn><urls></urls></record></Cite></EndNote>**}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Gimet</Author><Year>2011</Year><RecNum>1008</RecNum><DisplayText>Gimet and Lagoarde-Segot (2011)</DisplayText><record><rec-

number>1008</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477062151">1008</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Gimet, Céline</author><author>Lagoarde-Segot, Thomas</author></authors></contributors><titles><title>A closer look at financial development and income distribution</title><secondary-title>Journal of Banking & Finance</secondary-title></titles><periodical><full-title>Journal of banking & finance</full-title></periodical><pages>1698-1713</pages><volume>35</volume><number>7</number><keywords><keyword>Finance</keyword><keyword>Income distribution</keyword><keyword>SVAR</keyword></keywords><dates><year>2011</year><pub-dates><date>7//</date></pub-dates></dates><isbn>0378-4266</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S0378426610004401</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.jbankfin.2010.11.011</electronic-resource-num></record></Cite></EndNote>**}** do not construct an overall index for financial development, rather they evaluate the effects of bank development and stock market development separately. The former study reports that financial development indicator is not significant determinant of income inequality, irrespective of banking sector or stock market development indicator in Malaysia during 1980 to 2000. In contrast, the latter study observes that increased banking credit tends to increase income inequalities, but increased size and liquidity of the stock market have a negative impact on income inequality in a set of 49 countries over the period of 1994–2002.

In finance, the stock market is the single most important market with respect to corporate investment decisions. Also, going public allows firms to access more financial capital that can fuel innovation { ADDIN EN.CITE <EndNote><Cite><Author>Wies</Author><Year>2015</Year><RecNum>1010</RecNum><DisplayText>(Wies & Moorman, 2015)</DisplayText><record><rec-number>1010</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477104849">1010</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Wies, Simone</author><author>Moorman, Christine</author></authors></contributors><titles><title>Going public: how stock market listing changes firm innovation behavior</title><secondary-title>Journal of Marketing Research</secondary-title></titles><periodical><full-title>Journal of Marketing Research</full-title></periodical><pages>694-709</pages><volume>52</volume><number>5</number><dates><year>2015</year></dates><isbn>0022-2429</isbn><urls></urls></record></Cite></EndNote> } . The investment and innovation decisions of firms may have a considerable influence on unemployment, which may then affect the distribution of income. However, the above reviewed empirical studies usually neglect or put insufficient weight on stock market development when measuring financial development. For instance, financial system has two main components: stock markets and the banking system, but { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Beck</Author><Year>2007</Year><RecNum>984</RecNum><DisplayText>Beck, Demirgüç-Kunt, et al. (2007)</DisplayText><record><rec-number>984</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt"

timestamp="1476677350">984</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Beck, Thorsten</author><author>Demirgüç-Kunt, Asli</author><author>Levine, Ross</author></authors></contributors><titles><title>Finance, inequality and the poor</title><secondary-title>Journal of economic growth</secondary-title></titles><periodical><full-title>Journal of Economic Growth</full-title></periodical><pages>27-49</pages><volume>12</volume><number>1</number><dates><year>2007</year></dates><isbn>1381-4338</isbn><urls></urls></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Hamori</Author><Year>2012</Year><RecNum>1012</RecNum><DisplayText>Hamori and Hashiguchi (2012)</DisplayText><record><rec-number>1012</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477109009">1012</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Hamori, Shigeyuki</author><author>Hashiguchi, Yoshihiro</author></authors></contributors><titles><title>The effect of financial deepening on inequality: Some international evidence</title><secondary-title>Journal of Asian Economics</secondary-title></titles><periodical><full-title>Journal of Asian Economics</full-title></periodical><pages>353-359</pages><volume>23</volume><number>4</number><keywords><keyword>Financial deepening</keyword><keyword>Inequality</keyword><keyword>Equalizing effect</keyword><keyword>Dynamic

GMM</keyword></keywords><dates><year>2012</year><pub-dates><date>8//</date></pub-dates></dates><isbn>1049-0078</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S1049007812000024</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.asieco.2011.12.001</electronic-resource-num></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Lo Prete</Author><Year>2013</Year><RecNum>1152</RecNum><DisplayText>Lo Prete (2013)</DisplayText><record><rec-number>1152</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1500355354">1152</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lo Prete, Anna</author></authors></contributors><titles><title>Economic literacy, inequality, and financial development</title><secondary-title>Economics Letters</secondary-title></titles><periodical><full-title>Economics Letters</full-title></periodical><pages>74-76</pages><volume>118</volume><number>1</number><keywords><keyword>Inequality</keyword><keyword>Financial market participation</keyword><keyword>Economic competences</keyword></keywords><dates><year>2013</year><pub-dates><date>2013/01/01/</date></pub-dates></dates><isbn>0165-1765</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S0165176512005368</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.econlet.2012.09.029</electronic-resource-num></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite

AuthorYear="1"><Author>Jerzmanowski</Author><Year>2013</Year><RecNum>1011</RecNum><DisplayText>Jerzmanowski and Nabar (2013)</DisplayText><record><rec-number>1011</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477107880">1011</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Jerzmanowski, Michal</author><author>Nabar, Malhar</author></authors></contributors><titles><title>Financial development and wage inequality: Theory and evidence</title><secondary-title>Economic Inquiry</secondary-title></titles><periodical><full-title>Economic Inquiry</full-title></periodical><pages>211-234</pages><volume>51</volume><number>1</number><dates><year>2013</year></dates><isbn>1465-7295</isbn><urls></urls></record></Cite></EndNote> } and { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Jauch</Author><Year>2016</Year><RecNum>1210</RecNum><DisplayText>Jauch and Watzka (2016)</DisplayText><record><rec-number>1210</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1533799632">1210</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Jauch, Sebastian</author><author>Watzka, Sebastian</author></authors></contributors><titles><title>Financial development and income inequality: a panel data approach</title><secondary-title>Empirical Economics</secondary-title></titles><periodical><full-title>Empirical Economics</full-title></periodical><pages>291-314</pages><volume>51</volume><number>1</number><dates><year>2016</year></dates>

<publisher>Springer</publisher><isbn>0377-7332</isbn><urls></urls></record></Cite></EndNote>} measure financial development by only bank development indicator. { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Li</Author><Year>2014</Year><RecNum>1013</RecNum><DisplayText>Li and Yu (2014)</DisplayText><record><rec-number>1013</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477110398">1013</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Li, Jie</author><author>Yu, Han</author></authors></contributors><titles><title>Income inequality and financial reform in Asia: the role of human capital</title><secondary-title>Applied Economics</secondary-title></titles><periodical><full-title>Applied economics</full-title></periodical><pages>2920-2935</pages><volume>46</volume><number>24</number><dates><year>2014</year></dates><isbn>0003-6846</isbn><urls></urls></record></Cite></EndNote> } , { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Agnello</Author><Year>2012</Year><RecNum>997</RecNum><DisplayText>Agnello et al. (2012)</DisplayText><record><rec-number>997</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476803009">997</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Agnello, Luca</author><author>Mallick, Sushanta K</author><author>Sousa, Ricardo M</author></authors></contributors><titles><title>Financial reforms and income inequality</title><secondary-title>Economics Letters</secondary-title></titles><periodical><full-title>Economics Letters</full-title></periodical><pages>583-

587</pages><volume>116</volume><number>3</number><dates><year>2012</year></dates><isbn>0165-1765</isbn><urls></urls></record></Cite></EndNote> } and { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Johansson</Author><Year>2014</Year><RecNum>985</RecNum><DisplayText>Johansson and Wang (2014)</DisplayText><record><rec-number>985</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476678159">985</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Johansson, Anders C</author><author>Wang, Xun</author></authors></contributors><titles><title>Financial sector policies and income inequality</title><secondary-title>China Economic Review</secondary-title></titles><periodical><full-title>China Economic Review</full-title></periodical><pages>367-378</pages><volume>31</volume><dates><year>2014</year></dates><isbn>1043-951X</isbn><urls></urls></record></Cite></EndNote> } capture financial development by constructing an aggregate financial development based on seven individual reforms, but six of them are banking reform indicators while only one indicator for stock market reform. Moreover, the stock market development in these three studies is measured based on combining two aspects: whether a country intends to develop its security market and the openness of security market to foreign investors is taken into account. Nonetheless, it is measured by market capitalization and/or turnover and/or total value traded in the studies of { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Roine</Author><Year>2009</Year><RecNum>1014</RecNum><DisplayText>Roine et al. (2009)</DisplayText><record><rec-number>1014</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt"

timestamp="1477663949">1014</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Roine, Jesper</author><author>Vlachos, Jonas</author><author>Waldenström, Daniel</author></authors></contributors><titles><title>The long-run determinants of inequality: What can we learn from top income data?</title><secondary-title>Journal of Public Economics</secondary-title></titles><periodical><full-title>Journal of Public Economics</full-title></periodical><pages>974-988</pages><volume>93</volume><number>7</number><dates><year>2009</year></dates><isbn>0047-2727</isbn><urls></urls></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Law</Author><Year>2009</Year><RecNum>938</RecNum><DisplayText>Law and Tan (2009)</DisplayText><record><rec-number>938</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1474003012">938</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Law, Siong Hook</author><author>Tan, Hui Boon</author></authors></contributors><titles><title>The role of financial development on income inequality in Malaysia</title><secondary-title>Journal of Economic Development</secondary-title></titles><periodical><full-title>Journal of Economic Development</full-title></periodical><pages>153</pages><volume>34</volume><number>2</number><dates><year>2009</year></dates><isbn>0254-8372</isbn><urls></urls></record></Cite></EndNote>**}**, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Gimet</Author><Year>2011</Year><RecNum>1008</RecNum><

DisplayText>Gimet and Lagoarde-Segot (2011)</DisplayText><record><rec-number>1008</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477062151">1008</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Gimet, Céline</author><author>Lagoarde-Segot, Thomas</author></authors></contributors><titles><title>A closer look at financial development and income distribution</title><secondary-title>Journal of Banking & Finance</secondary-title></titles><periodical><full-title>Journal of banking & finance</full-title></periodical><pages>1698-1713</pages><volume>35</volume><number>7</number><keywords><keyword>Finance</keyword><keyword>Income distribution</keyword><keyword>SVAR</keyword></keywords><dates><year>2011</year><pub-dates><date>7//</date></pub-dates></dates><isbn>0378-4266</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S0378426610004401</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.jbankfin.2010.11.011</electronic-resource-num></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Seven</Author><Year>2016</Year><RecNum>919</RecNum><DisplayText>Seven and Coskun (2016)</DisplayText><record><rec-number>919</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1473993728">919</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Seven, Unal</author><author>Coskun,

Yener</author></authors></contributors><titles><title>Does financial development reduce income inequality and poverty? Evidence from emerging countries</title><secondary-title>Emerging Markets Review</secondary-title></titles><periodical><full-title>Emerging Markets Review</full-title></periodical><pages>34-63</pages><volume>26</volume><dates><year>2016</year></dates><isbn>1566-0141</isbn><urls></urls></record></Cite></EndNote>**}**. Further, the findings of the reviewed studies show no consensus on the effects of bank system development, stock market development and overall financial development on income inequality. In addition, the financial market development is not uniform across the developed and developing economies but the previous studies, mostly, put together both the developed and developing countries in their analyses. Therefore, the findings derived from these studies may not be reliable as the stages of financial development significantly vary among these two groups of countries.

2.2 The impact of FDI inflows, trade openness, per capita income and education on income inequalities

Along with financial development, FDI inflows, trade openness, GDP per capita growth and education could also be the key macroeconomic drivers of income inequality. A number of previous studies **{** ADDIN EN.CITE **{** ADDIN EN.CITE.DATA **}}** documents that FDI inflows have significant negative impact on unemployment rate, both skilled and unskilled workers, and income distribution. **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Taylor</Author><Year>2005</Year><RecNum>1112</RecNum><DisplayText>Taylor and Driffield (2005)</DisplayText><record><rec-number>1112</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1493480499">1112</key></foreign-keys><ref-type name="Journal

Article">17</ref-type><contributors><authors><author>Taylor, Karl</author><author>Driffield, Nigel</author></authors></contributors><titles><title>Wage inequality and the role of multinationals: Evidence from UK panel data</title><secondary-title>Labour Economics</secondary-title></titles><periodical><full-title>Labour Economics</full-title></periodical><pages>223-249</pages><volume>12</volume><number>2</number><dates><year>2005</year></dates><publisher>Elsevier</publisher><isbn>0927-5371</isbn><urls></urls></record></Cite></EndNote> **}** , and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Choi</Author><Year>2006</Year><RecNum>1106</RecNum><DisplayText>Choi (2006)</DisplayText><record><rec-number>1106</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1493474468">1106</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Choi, Changkyu</author></authors></contributors><titles><title>Does foreign direct investment affect domestic income inequality?</title><secondary-title>Applied Economics Letters</secondary-title></titles><periodical><full-title>Applied Economics Letters</full-title></periodical><pages>811-814</pages><volume>13</volume><number>12</number><dates><year>2006</year></dates><isbn>1350-4851</isbn><urls></urls></record></Cite></EndNote> **}** report that FDI inflows contribute to uneven income distribution in developing countries, while in developed countries, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Figini</Author><Year>2011</Year><RecNum>1114</RecNum><

DisplayText>Figini (2011)</DisplayText><record><rec-number>1114</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1494908012">1114</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Figini, Paolo</author></authors></contributors><titles><title>Does foreign direct investment affect wage inequality? An empirical investigation</title><secondary-title>The World Economy</secondary-title></titles><periodical><full-title>The World Economy</full-title></periodical><pages>1455-1475</pages><volume>34</volume><number>9</number><dates><year>2011</year></dates><publisher>Wiley Online Library</publisher><isbn>1467-9701</isbn><urls></urls></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Chintrakarn</Author><Year>2012</Year><RecNum>1119</RecNum><DisplayText>Chintrakarn et al. (2012)</DisplayText><record><rec-number>1119</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1494913638">1119</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Chintrakarn, Pandej</author><author>Herzer, Dierk</author><author>Nunnenkamp, Peter</author></authors></contributors><titles><title>FDI and income inequality: Evidence from a panel of US states</title><secondary-title>Economic Inquiry</secondary-title></titles><periodical><full-title>Economic Inquiry</full-title></periodical><pages>788-801</pages><volume>50</volume><number>3</number><dates><year>2012</year></dates><publisher>Wiley Online Library</publisher><isbn>1465-

7295</isbn><urls></urls></record></Cite></EndNote>} document that FDI inflows decrease wage inequality. { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Lessmann</Author><Year>2013</Year><RecNum>1116</RecNum><DisplayText>Lessmann (2013)</DisplayText><record><rec-number>1116</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1494909455">1116</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lessmann, Christian</author></authors></contributors><titles><title>Foreign direct investment and regional inequality: A panel data analysis</title><secondary-title>China Economic Review</secondary-title></titles><periodical><full-title>China Economic Review</full-title></periodical><pages>129-149</pages><volume>24</volume><keywords><keyword>Regional inequality</keyword><keyword>Foreign direct investment</keyword><keyword>Panel data</keyword></keywords><dates><year>2013</year><pub-dates><date>3//</date></pub-dates></dates><isbn>1043-951X</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S1043951X12001216</url></related-urls></urls><electronic-resource-num>https://doi.org/10.1016/j.chieco.2012.12.001</electronic-resource-num></record></Cite></EndNote>} finds an insignificant effect of FDI on income inequality. The higher mobility of individuals and government policies in high income economies might have mitigated the positive impact of net FDI on income inequality { ADDIN EN.CITE <EndNote><Cite><Author>Lessmann</Author><Year>2013</Year><RecNum>1116</RecNum><DisplayText>(Lessmann, 2013)</DisplayText><record><rec-number>1116</rec-

number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1494909455">1116</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lessmann, Christian</author></authors></contributors><titles><title>Foreign direct investment and regional inequality: A panel data analysis</title><secondary-title>China Economic Review</secondary-title></titles><periodical><full-title>China Economic Review</full-title></periodical><pages>129-149</pages><volume>24</volume><keywords><keyword>Regional inequality</keyword><keyword>Foreign direct investment</keyword><keyword>Panel data</keyword></keywords><dates><year>2013</year><pub-dates><date>3//</date></pub-dates></dates><isbn>1043-951X</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S1043951X12001216</url></related-urls></urls><electronic-resource-num>https://doi.org/10.1016/j.chieco.2012.12.001</electronic-resource-num></record></Cite></EndNote>**}**. Combining developed and developing countries, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Herzer</Author><Year>2013</Year><RecNum>1131</RecNum><DisplayText>Herzer and Nunnenkamp (2013)</DisplayText><record><rec-number>1131</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1495011976">1131</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Herzer, Dierk</author><author>Nunnenkamp, Peter</author></authors></contributors><titles><title>Inward and outward FDI and income

inequality: evidence from Europe</title><secondary-title>Review of world economics</secondary-title></titles><periodical><full-title>Review of world economics</full-title></periodical><pages>395-422</pages><volume>149</volume><number>2</number><dates><year>2013</year></dates><publisher>Springer</publisher><isbn>1610-2878</isbn><urls></urls></record></Cite></EndNote>**}** observe that an increase in inward and outward FDI reduces income inequality in the long run.

Trade openness, often measured by the ratio of sum of exports and imports to GDP, is closely related to unemployment rate **{** ADDIN EN.CITE **{** ADDIN EN.CITE.DATA **}}** since the flow of goods across borders certainly affects economic activities of a country. The previous studies, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Lim</Author><Year>2016</Year><RecNum>986</RecNum><DisplayText>Lim and McNelis (2016)</DisplayText><record><rec-number>986</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476689065">986</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lim, GC</author><author>McNelis, Paul D</author></authors></contributors><titles><title>Income growth and inequality: The threshold effects of trade and financial openness</title><secondary-title>Economic Modelling</secondary-title></titles><periodical><full-title>Economic Modelling</full-title></periodical><pages>403-412</pages><volume>58</volume><dates><year>2016</year></dates><isbn>0264-9993</isbn><urls></urls></record></Cite></EndNote> **}** and, **{** ADDIN EN.CITE <EndNote><Cite

AuthorYear="1"><Author>Afesorgbor</Author><Year>2016</Year><RecNum>983</RecNum><DisplayText>Afesorgbor and Mahadevan (2016)</DisplayText><record><rec-number>983</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476633346">983</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Afesorgbor, Sylvanus Kwaku</author><author>Mahadevan, Renuka</author></authors></contributors><titles><title>The impact of economic sanctions on income inequality of target states</title><secondary-title>World Development</secondary-title></titles><periodical><full-title>World Development</full-title></periodical><pages>1-11</pages><volume>83</volume><dates><year>2016</year></dates><isbn>0305-750X</isbn><urls></urls></record></Cite></EndNote>**}**, confirm that trade openness reduces income inequality, while some other authors, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Hamori</Author><Year>2012</Year><RecNum>1012</RecNum><DisplayText>Hamori and Hashiguchi (2012)</DisplayText><record><rec-number>1012</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477109009">1012</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Hamori, Shigeyuki</author><author>Hashiguchi, Yoshihiro</author></authors></contributors><titles><title>The effect of financial deepening on inequality: Some international evidence</title><secondary-title>Journal of Asian Economics</secondary-title></titles><periodical><full-title>Journal of Asian Economics</full-title></periodical><pages>353-

359</pages><volume>23</volume><number>4</number><keywords><keyword>Financial deepening</keyword><keyword>Inequality</keyword><keyword>Equalizing effect</keyword><keyword>Dynamic GMM</keyword></keywords><dates><year>2012</year><pub-dates><date>8//</date></pub-dates></dates><isbn>1049-0078</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S1049007812000024</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.asieco.2011.12.001</electronic-resource-num></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Cabral</Author><Year>2016</Year><RecNum>995</RecNum><DisplayText>Cabral et al. (2016)</DisplayText><record><rec-number>995</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476801292">995</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Cabral, René</author><author>Garcia-Diaz, Rocio</author><author>Mollick, André Varella</author></authors></contributors><titles><title>Does globalization affect top income inequality?</title><secondary-title>Journal of Policy Modeling</secondary-title></titles><periodical><full-title>Journal of Policy Modeling</full-title></periodical><pages>916-940</pages><volume>38</volume><number>5</number><dates><year>2016</year></dates><isbn>0161-8938</isbn><urls></urls></record></Cite></EndNote>**}**, argue that it widens the income gap between the rich and poor. In contrary, a number of other studies, **{** ADDIN EN.CITE <EndNote><Cite

AuthorYear="1"><Author>Beck</Author><Year>2007</Year><RecNum>984</RecNum><DisplayText>Beck, Demirgüç-Kunt, et al. (2007)</DisplayText><record><rec-number>984</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476677350">984</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Beck, Thorsten</author><author>Demirgüç-Kunt, Asli</author><author>Levine, Ross</author></authors></contributors><titles><title>Finance, inequality and the poor</title><secondary-title>Journal of economic growth</secondary-title></titles><periodical><full-title>Journal of Economic Growth</full-title></periodical><pages>27-49</pages><volume>12</volume><number>1</number><dates><year>2007</year></dates><isbn>1381-4338</isbn><urls></urls></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Roine</Author><Year>2009</Year><RecNum>1014</RecNum><DisplayText>Roine et al. (2009)</DisplayText><record><rec-number>1014</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477663949">1014</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Roine, Jesper</author><author>Vlachos, Jonas</author><author>Waldenström, Daniel</author></authors></contributors><titles><title>The long-run determinants of inequality: What can we learn from top income data?</title><secondary-title>Journal of Public Economics</secondary-title></titles><periodical><full-title>Journal of Public Economics</full-title></periodical><pages>974-

988</pages><volume>93</volume><number>7</number><dates><year>2009</year></dates><isbn>0047-2727</isbn><urls></urls></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Johansson</Author><Year>2014</Year><RecNum>985</RecNum><DisplayText>Johansson and Wang (2014)</DisplayText><record><rec-number>985</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476678159">985</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Johansson, Anders C</author><author>Wang, Xun</author></authors></contributors><titles><title>Financial sector policies and income inequality</title><secondary-title>China Economic Review</secondary-title></titles><periodical><full-title>China Economic Review</full-title></periodical><pages>367-378</pages><volume>31</volume><dates><year>2014</year></dates><isbn>1043-951X</isbn><urls></urls></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Boukhatem</Author><Year>2016</Year><RecNum>987</RecNum><DisplayText>Boukhatem (2016)</DisplayText><record><rec-number>987</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476786055">987</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Boukhatem, Jamel</author></authors></contributors><titles><title>Assessing the direct effect of financial development on poverty reduction in a panel of low-and middle-income countries</title><secondary-title>Research in International Business and Finance</secondary-

title></titles><periodical><full-title>Research in International Business and Finance</full-title></periodical><pages>214-230</pages><volume>37</volume><dates><year>2016</year></dates><isbn>0275-5319</isbn><urls></urls></record></Cite></EndNote> **}** , find that trade openness has no significant impact on income inequality.

GDP per capita growth affects income inequality as it influences the growth of firms, which is closely related to the labour demand and then the labour price. **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Roine</Author><Year>2009</Year><RecNum>1014</RecNum><DisplayText>Roine et al. (2009)</DisplayText><record><rec-number>1014</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477663949">1014</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Roine, Jesper</author><author>Vlachos, Jonas</author><author>Waldenström, Daniel</author></authors></contributors><titles><title>The long-run determinants of inequality: What can we learn from top income data?</title><secondary-title>Journal of Public Economics</secondary-title></titles><periodical><full-title>Journal of Public Economics</full-title></periodical><pages>974-988</pages><volume>93</volume><number>7</number><dates><year>2009</year></dates><isbn>0047-2727</isbn><urls></urls></record></Cite></EndNote>**}** detect that there is a strong positive relationship between GDP per capita growth and the share of total income for those with the 10% highest incomes, but this relationship turns out to be negative for those with 90% lowest incomes in 16 countries. This finding suggests that in periods of high GDP per capita growth, the

rich have benefitted more than the poor, and thus enhancing income inequality. In contrast, { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Beck</Author><Year>2007</Year><RecNum>984</RecNum><DisplayText>Beck, Demirgüç-Kunt, et al. (2007)</DisplayText><record><rec-number>984</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476677350">984</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Beck, Thorsten</author><author>Demirgüç-Kunt, Asli</author><author>Levine, Ross</author></authors></contributors><titles><title>Finance, inequality and the poor</title><secondary-title>Journal of economic growth</secondary-title></titles><periodical><full-title>Journal of Economic Growth</full-title></periodical><pages>27-49</pages><volume>12</volume><number>1</number><dates><year>2007</year></dates><isbn>1381-4338</isbn><urls></urls></record></Cite></EndNote> } , { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Seven</Author><Year>2016</Year><RecNum>919</RecNum><DisplayText>Seven and Coskun (2016)</DisplayText><record><rec-number>919</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1473993728">919</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Seven, Unal</author><author>Coskun, Yener</author></authors></contributors><titles><title>Does financial development reduce income inequality and poverty? Evidence from emerging countries</title><secondary-title>Emerging Markets Review</secondary-title></titles><periodical><full-title>Emerging

Markets Review</full-title></periodical><pages>34-63</pages><volume>26</volume><dates><year>2016</year></dates><isbn>1566-0141</isbn><urls></urls></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Boukhatem</Author><Year>2016</Year><RecNum>987</RecNum><DisplayText>Boukhatem (2016)</DisplayText><record><rec-number>987</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476786055">987</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Boukhatem, Jamel</author></authors></contributors><titles><title>Assessing the direct effect of financial development on poverty reduction in a panel of low-and middle-income countries</title><secondary-title>Research in International Business and Finance</secondary-title></titles><periodical><full-title>Research in International Business and Finance</full-title></periodical><pages>214-230</pages><volume>37</volume><dates><year>2016</year></dates><isbn>0275-5319</isbn><urls></urls></record></Cite></EndNote>**}** observe insignificant effects of GDP per capita growth on the distribution of income in developing countries, and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Johansson</Author><Year>2014</Year><RecNum>985</RecNum><DisplayText>Johansson and Wang (2014)</DisplayText><record><rec-number>985</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476678159">985</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Johansson, Anders

C</author><author>Wang, Xun</author></authors></contributors><titles><title>Financial sector policies and income inequality</title><secondary-title>China Economic Review</secondary-title></titles><periodical><full-title>China Economic Review</full-title></periodical><pages>367-378</pages><volume>31</volume><dates><year>2014</year></dates><isbn>1043-951X</isbn><urls></urls></record></Cite></EndNote>**}** document negative effects of GDP per capita growth on income inequality.

People with better schooling are more likely to get a job **{** ADDIN EN.CITE **{** ADDIN EN.CITE.DATA **}}** , which is closely related to their earnings. **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Lo Prete</Author><Year>2013</Year><RecNum>1152</RecNum><DisplayText>Lo Prete (2013)</DisplayText><record><rec-number>1152</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1500355354">1152</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lo Prete, Anna</author></authors></contributors><titles><title>Economic literacy, inequality, and financial development</title><secondary-title>Economics Letters</secondary-title></titles><periodical><full-title>Economics Letters</full-title></periodical><pages>74-76</pages><volume>118</volume><number>1</number><keywords><keyword>Inequality</keyword><keyword>Financial market participation</keyword><keyword>Economic competences</keyword></keywords><dates><year>2013</year><pub-dates><date>2013/01/01/</date></pub-dates></dates><isbn>0165-1765</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S0165176512005368</url></related-

urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.econlet.2012.09.029</electronic-resource-num></record></Cite></EndNote> } , { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Johansson</Author><Year>2014</Year><RecNum>985</RecNum><DisplayText>Johansson and Wang (2014)</DisplayText><record><rec-number>985</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476678159">985</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Johansson, Anders C</author><author>Wang, Xun</author></authors></contributors><titles><title>Financial sector policies and income inequality</title><secondary-title>China Economic Review</secondary-title></titles><periodical><full-title>China Economic Review</full-title></periodical><pages>367-378</pages><volume>31</volume><dates><year>2014</year></dates><isbn>1043-951X</isbn><urls></urls></record></Cite></EndNote> } and { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Li</Author><Year>2014</Year><RecNum>1013</RecNum><DisplayText>Li and Yu (2014)</DisplayText><record><rec-number>1013</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477110398">1013</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Li, Jie</author><author>Yu, Han</author></authors></contributors><titles><title>Income inequality and financial reform in Asia: the role of human capital</title><secondary-title>Applied Economics</secondary-title></titles><periodical><full-title>Applied economics</full-title></periodical><pages>2920-

2935</pages><volume>46</volume><number>24</number><dates><year>2014</year></dates><isbn>0003-6846</isbn><urls></urls></record></Cite></EndNote> **}** find no evidence of a significant relationship between education and income inequality. Nonetheless, **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Brunello</Author><Year>2009</Year><RecNum>1158</RecNum><DisplayText>Brunello et al. (2009)</DisplayText><record><rec-number>1158</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1500373696">1158</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Brunello, Giorgio</author><author>Fort, Margherita</author><author>Weber, Guglielmo</author></authors></contributors><titles><title>Changes in compulsory schooling, education and the distribution of wages in Europe</title><secondary-title>The Economic Journal</secondary-title></titles><periodical><full-title>The Economic Journal</full-title></periodical><pages>516-539</pages><volume>119</volume><number>536</number><dates><year>2009</year></dates><publisher>Wiley Online Library</publisher><isbn>1468-0297</isbn><urls></urls></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Seven</Author><Year>2016</Year><RecNum>919</RecNum><DisplayText>Seven and Coskun (2016)</DisplayText><record><rec-number>919</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1473993728">919</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Seven, Unal</author><author>Coskun,

Yener</author></authors></contributors><titles><title>Does financial development reduce income inequality and poverty? Evidence from emerging countries</title><secondary-title>Emerging Markets Review</secondary-title></titles><periodical><full-title>Emerging Markets Review</full-title></periodical><pages>34-63</pages><volume>26</volume><dates><year>2016</year></dates><isbn>1566-0141</isbn><urls></urls></record></Cite></EndNote> **}** report that education improves the distribution of income.

Given this background, we can argue that the previous studies fail to take into a comprehensive approach to measure the financial development, more specifically the stock market indicators. Further, the previous studies have not compared the effect of financial development on income inequalities across the developed and emerging markets, as there is a significant variation between these two groups of countries, in terms of level of financial development, economic growth and income inequalities. Therefore, to address these issues, we measure financial development with three stock market indicators (i.e. market capitalization, total value traded and turnover ratio) and banking credit to the private sector. Along with these financial indicators, we also consider the role of FDI inflows on income inequality and three other important control factors in the model such as per capita income, education, and trade openness. Our study makes use of annual data from 1981 to 2014 on 20 developed and 18 emerging market economies around the world. Finally, study employs two robust panel econometric techniques such as the ARDL model and heterogeneous non-causality test. Given that, our study makes an important contribution to the policy and empirical literature.

3. Nature of data and empirical methodology

3.1. Data measurement

This research paper makes use of annual data that ranges from 1981 to 2014 on 20 developed and 18 emerging market economies around the world. The considered sample countries are divided into developed and emerging market economies based on the Morgan Stanley Capital International (MSCI) market classification. Given that, the selection of the sample period and countries are based on the availability of data. The selected developed market economies are Australia, Austria, Canada, Denmark, Finland, France, Germany, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom (UK) and the United States (US), while emerging market economies are Brazil, Chile, China, Colombia, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, South Africa, Thailand and Turkey. Using these annual data on considered developed and emerging market economies, we construct unbalanced panel data sets.[1]

The variables of this study are measured as follows: the Gini index (GINI) measures the income inequalities, higher (lower) Gini index value indicates higher (lower) income inequalities; we use three indicators for the stock market development such as; stock market capitalization as a percentage of GDP (SMC); stock market turnover ratio in percentage (SMTOR); and stock market total value traded as a percentage of GDP (SMTVT). Similarly, domestic credit to the private sector by the banks, as a percentage of GDP (DCPS); foreign direct investment, net inflows as a percentage of GDP (FDI);[2] primary education is measured as total enrolments by both the sexes

[1] Since all the countries and variables do not have data for the entire sample period; hence we construct unbalanced panel data sets for both the developed and emerging market economies.
[2] For some countries, the FDI net inflow values are negative. Therefore, we have added a consistent value for the FDI series so that we can convert FDI series into natural logarithms.

(PRI); per capita income is the GDP per capita in constant 2010 US$ (PI); and finally, trade openness, total exports and imports of goods and services, as a percentage of GDP (TO). The required data on SMC, SMTOR and SMTVT, DCPS, FDI, PRI, PI and TO are obtained from the World Bank online databases, while data on Gini index is sourced from the Standardized World Income Inequality Database (SWIID). Since all of these variables are measured in different units, following { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Paramati</Author><Year>2016</Year><RecNum>1220</RecNum><DisplayText>Paramati et al. (2016)</DisplayText><record><rec-number>1220</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1533983993">1220</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Paramati, Sudharshan Reddy</author><author>Ummalla, Mallesh</author><author>Apergis, Nicholas</author></authors></contributors><titles><title>The effect of foreign direct investment and stock market growth on clean energy use across a panel of emerging market economies</title><secondary-title>Energy Economics</secondary-title></titles><periodical><full-title>Energy Economics</full-title></periodical><pages>29-41</pages><volume>56</volume><dates><year>2016</year></dates><publisher>Elsevier</publisher><isbn>0140-9883</isbn><urls></urls></record></Cite></EndNote>}, we convert them into natural logarithms before we begin our empirical analyses.

3.2. Empirical methodology

The objective of this study is to empirically investigate the effect of stock market indicators on income inequalities and also examine the role of banking and FDI inflows on income inequalities

across the panels of developed and emerging market economies. To achieve these objectives, our study makes use of the following equations:

$$GINI_{it} = f\,(PI_{it}, PRI_{it}, TO_{it}, SMC_{it}) \quad (1)$$

$$GINI_{it} = f\,(PI_{it}, PRI_{it}, TO_{it}, SMTOR_{it}) \quad (2)$$

$$GINI_{it} = f\,(PI_{it}, PRI_{it}, TO_{it}, SMTVT_{it}) \quad (3)$$

$$GINI_{it} = f\,(PI_{it}, PRI_{it}, TO_{it}, DCPS_{it}) \quad (4)$$

$$GINI_{it} = f\,(PI_{it}, PRI_{it}, TO_{it}, FDI_{it}) \quad (5)$$

where, GINI, PI, PRI, TO, SMC, SMTOR, SMTVT, DCPS, and FDI indicate income inequalities, per capita income, education, trade openness, stock market capitalization, stock market turnover ratio, stock market total value traded, domestic credit to the private sector by the banks, and foreign direct investment net inflows, respectively. The subscripts *i* and *t* represent for cross-section and time period, respectively. The stock market indicators are incorporated into equation (1), (2) and (3) while banking and FDI are included in equation (4) and (5), respectively. The study includes per capita income, education and trade openness as the potential determinants of income inequalities.

As a first step of the empirical analysis, we employ two panel unit root tests to investigate the order of integration of the variables as this determines the selection of econometric models for the analyses. For instance, the common unit root process is examined using **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Levin</Author><Year>2002</Year><RecNum>1120</RecNum><DisplayText>Levin et al. (2002)</DisplayText><record><rec-number>1120</rec-

number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1494923253">1120</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Levin, Andrew</author><author>Lin, Chien-Fu</author><author>Chu, Chia-Shang James</author></authors></contributors><titles><title>Unit root tests in panel data: asymptotic and finite-sample properties</title><secondary-title>Journal of econometrics</secondary-title></titles><periodical><full-title>Journal of econometrics</full-title></periodical><pages>1-24</pages><volume>108</volume><number>1</number><dates><year>2002</year></dates><publisher>Elsevier</publisher><isbn>0304-4076</isbn><urls></urls></record></Cite></EndNote>**}** (LLC) test, while the individual unit root process is investigated by employing **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Im</Author><Year>2003</Year><RecNum>1121</RecNum><DisplayText>Im et al. (2003)</DisplayText><record><rec-number>1121</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1494923342">1121</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Im, Kyung So</author><author>Pesaran, M. Hashem</author><author>Shin, Yongcheol</author></authors></contributors><titles><title>Testing for unit roots in heterogeneous panels</title><secondary-title>Journal of econometrics</secondary-title></titles><periodical><full-title>Journal of econometrics</full-title></periodical><pages>53-74</pages><volume>115</volume><number>1</number><dates><year>2003</year></dates><publisher>Elsevier</publisher><isbn>0304-

4076</isbn><urls></urls></record></Cite></EndNote>} (IPS) test. For both the tests, the null hypothesis of a unit root is tested as against the alternative hypothesis of no unit root. If all of the variables are integrated in the order of one or I (1), then this indicates that all of the variables are non-stationary at the levels and stationary at their first order differentials. This finding may suggest that these variables, as a group, may have a cointegration relationship in the long-run.

The long-run income inequality elasticities are estimated using the panel ARDL models. The significance of the ARDL method is that it can be applied to a model, which possesses different order of integration of the variables, that is, either I (0) or I (1). Therefore, given the nature of our variables, the ARDL model is more appropriate to examine the long-run income inequality elasticities. Given that, we estimate a single cointegrating vector to investigate long-run estimates. To this end, we apply the panel approach suggested by { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Pesaran</Author><Year>1999</Year><RecNum>1122</RecNum><DisplayText>Pesaran et al. (1999)</DisplayText><record><rec-number>1122</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1494923430">1122</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Pesaran, M. Hashem</author><author>Shin, Yongcheol</author><author>Smith, Ron P.</author></authors></contributors><titles><title>Pooled mean group estimation of dynamic heterogeneous panels</title><secondary-title>Journal of the American Statistical Association</secondary-title></titles><periodical><full-title>Journal of the American statistical Association</full-title></periodical><pages>621-634</pages><volume>94</volume><number>446</number><dates><year>1999</year></dates><publisher>Taylor & Francis</publisher><isbn>0162-

1459</isbn><urls></urls></record></Cite></EndNote>**}**. This panel ARDL approach assumes cross-sectional independence, implying that the disturbances are independently distributed across units and over time with zero mean and constant variances. The appropriate lag length for this test is selected based on the Akaike Information Criteria (AIC).

Finally, we apply short-run bivariate panel non-causality test to examine the direction of causalities of income inequalities with the stock market indicators, banking credit and FDI inflows. For this reason, we make use of the approach suggested by **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Dumitrescu</Author><Year>2012</Year><RecNum>1123</RecNum><DisplayText>Dumitrescu and Hurlin (2012)</DisplayText><record><rec-number>1123</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1494923528">1123</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Dumitrescu, Elena-Ivona</author><author>Hurlin, Christophe</author></authors></contributors><titles><title>Testing for Granger non-causality in heterogeneous panels</title><secondary-title>Economic Modelling</secondary-title></titles><periodical><full-title>Economic Modelling</full-title></periodical><pages>1450-1460</pages><volume>29</volume><number>4</number><dates><year>2012</year></dates><publisher>Elsevier</publisher><isbn>0264-9993</isbn><urls></urls></record></Cite></EndNote>**}**. This test requires all the variables to be

stationary; hence, we apply it on the first difference data series of these variables.[3] The null hypothesis of no causality is tested against the alternative hypothesis of causality at least for few cross-sections. The Wald statistics are computed separately for each cross-section and the panel test value is obtained by taking the cross-sectional average of individual Wald statistics.

3.3. Preliminary analysis

We begin our preliminary analysis with compounded annual average growth rates, which are reported in Table 1. The average growth rates on developed market economies show that only Switzerland has the negative growth rates in income inequalities (GINI). The lowest growth in income inequalities is seen in Norway, France and then the Netherlands, while Japan, Sweden and Finland have the highest positive growth. The growth rates of stock market capitalization (SMC) indicate that all of the developed market economies have positive growth, and the highest is in Norway, whereas Singapore, New Zealand, Canada and Italy have lowest positive growth. Some countries have shown negative growth rates in stock market turnover ratio (SMTOR) such as Switzerland and Germany while other countries namely Norway and Denmark have more than 10 percent positive growth. The growth rates of stock market total value traded (SMTVT) show that the countries like Norway and Denmark have more than 20 percent growth while only New Zealand has negative growth. We also notice from these growth rates that the domestic credit to the private sector (DCPS) is only negative in Germany, while the negative growth rates for FDI inflows (FDI) are found in Japan, New Zealand and Austria.

[3] Given that our variables have mixed order of integration that is either I (0) or I (1), therefore for the purpose of consistency, in measurement of the variables, we convert all of our variables into first order differences, before we apply short-run causalities.

Similarly, the growth rates of income inequalities are found to be negative in 10 emerging market economies such as Thailand, Turkey, Peru, Brazil, Korea, Malaysia, Chile, Egypt, Colombia and Hungary, while other 8 emerging market economies have positive growth rates. It is found that the growth rates on stock market capitalization and stock market total value traded are positive for all of the emerging market economies. However, we find that the stock market turnover ratio is negative in Peru, Poland, Mexico, the Philippines, Indonesia, India, and Brazil. The domestic credit to the private sector is only negative in Brazil, while FDI has a negative growth in Poland, Thailand, Egypt, the Philippines, and China. Among the control variables, the per capita income has a positive growth rates across the developed and emerging market economies, whereas both primary education and trade openness have shown mixed growth rates across the panels. Overall, these compounded annual average growth rates imply that the income inequalities are mostly widening in developed economies, while most of the emerging economies have shown negative growth. Therefore, it implies that the income inequalities are going to be a major concern in developed economies than the emerging economies.

[Insert Table 1 here]

Table 2 reports summary statistics on the developed and emerging market economies. Among the developed economies, Singapore, the US and New Zealand have higher inequalities while Sweden, Denmark and Finland have the least. Among the emerging economies, South Africa, Peru and Colombia have higher inequalities whereas Hungary, Poland and Korea have lower inequalities. These statistics show that the emerging market economies, as a whole, have higher income inequalities (42.56) than those of developed economies (29.80). However, the developed market economies have higher stock market capitalization, turnover ratio and total value traded as compared to the emerging market economies. As expected, domestic credit to the private sector,

FDI inflows, trade openness, and per capita income are considerably higher in developed economies than the emerging economies. Nevertheless, the average primary education enrolments are substantially higher in emerging market economies. These summary statistics suggest that the developed economies have higher averages across the variables with the exception of income inequalities and primary education enrolments where emerging market economies have higher average values.[4]

[Insert Table 2 here]

4. Empirical results and discussion

4.1. Testing the order of integration of the variables

It is important to identify the order of integration of the variables, before we choose any econometric model to achieve the study objectives. Therefore, we apply two panel unit root tests based on the common as well as individual unit process. These tests require a suitable lag length to be used while estimating the models, so we selected the appropriate lags based on AIC method. The results of these unit root tests are displayed in Table 3. The results of LLC test (assumes common unit root process) and IPS test (assumes individual unit root process) on developed market economies show that GINI, PRI, SMC, SMTOR, SMTVT, DCPS and FDI are stationary at the levels, while TO is non-stationary and in the case of PI, we find mixed results. Further, the results of first difference data series imply that the null hypothesis of a unit root (non-stationary) is strongly rejected for all of the variables. Similarly, the unit root tests result on the emerging market economies reveal that GINI, PI and DCPS have a unit root at the levels, whereas SMC, SMTOR, SMTVT and FDI have rejected the null hypothesis of a unit root. We also find mixed

[4] We have also provided detailed descriptive statistics in Appendix-I.

results for PRI and TO. However, all of these variables reject the null hypothesis of non-stationary at the first difference data series. Based on these findings, we can conclude that the considered variables have mixed-order of integration that is I (0) and I (1), and hence the application of standard ordinary least squares (OLS) method is invalid.[5]

[Insert Table 3 here]

4.2 Estimation of long-run income inequality elasticities

Since our variables have mixed order of integration, hence the application of an ARDL model is more suitable for estimating the long-run income inequality elasticities. This technique can provide more robust and reliable results even in the presence of I (0) or I (1) variables in the model. The empirical results of panel ARDL models on long-run elasticities of income inequalities of developed economies are presented in Table 4.

- A 1% growth in SMC, SMTOR, and SMTVT raises income inequalities by 0.085%, 0.035%, and 0.018%, respectively, while a 1% increase in DCPS decreases income inequalities by 0.057%.

The long-run estimates indicate that the stock market indicators such as SMC, SMTOR and SMTVT have significant positive impact on income inequalities in developed market economies. On the other hand, we find that DCPS decreases income inequalities. However, FDI has a negative impact on inequality but it is not statistically significant. Given these results, we argue that the stock market indicators such as the market capitalization, turnover ratio and total value traded play

[5] We have also applied second generation panel unit root tests, as recommended by a number of recent studies such as Bhattacharya et al., 2018; Lau et al., 2012; Paramati, Alam et al., 2018; Paramati, Apergis et al., 2018; Paramati, Bhattacharya et al., 2018, to examine the order of integration of the variables. Our results suggested that the selected variables have mixed order of integration. Due to space limitation, these results are not reported in the paper but can be provided upon request.

an important role to increase the income disparities in the developed economies. In contradiction to that, the growth of domestic credit to the private sector by the banks plays an important role in reducing income inequalities. These findings suggest that the stock markets increase income inequalities, while banking credit plays the opposite role i.e. reduces inequalities in developed economies.

- A 1% raise in SMC, SMTOR, SMTVT and DCPS decreases income inequalities by 0.022%, 0.094%, 0.021% and 0.097%, respectively.

The above long-run elasticities of emerging market economies show that the stock market indicators (SMC, SMTOR and SMTVT), along with other important financial indicator such as domestic credit to the private sector by the banks, reduce income inequalities. Our findings also show that FDI inflows have negative impact on income inequalities but it is not statistically significant. It is important to note that the role of stock market indicators on income inequalities is substantially varies among the developed and emerging market economies. However, the banking credit and FDI inflows have similar effect on inequalities across the developed and emerging economies. Further, we notice that the negative effect of banking credit on income inequality is much stronger in emerging economies than in developed economies. Our results also suggest that, among all the indicators, banking credit has more negative impact on inequalities in emerging economies, implying that it plays a greater role in improving income distribution among the individuals of emerging economies.

[Insert Table 4 here]

4.3 Analysis of short-run causalities

We further investigate the short-run dynamic causalities among income inequalities, stock market indicators, banking credit and FDI inflows using heterogeneous panel causality test. For this purpose, we use { ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Dumitrescu</Author><Year>2012</Year><RecNum>1123</RecNum><DisplayText>Dumitrescu and Hurlin (2012)</DisplayText><record><rec-number>1123</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1494923528">1123</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Dumitrescu, Elena-Ivona</author><author>Hurlin, Christophe</author></authors></contributors><titles><title>Testing for Granger non-causality in heterogeneous panels</title><secondary-title>Economic Modelling</secondary-title></titles><periodical><full-title>Economic Modelling</full-title></periodical><pages>1450-1460</pages><volume>29</volume><number>4</number><dates><year>2012</year></dates><publisher>Elsevier</publisher><isbn>0264-9993</isbn><urls></urls></record></Cite></EndNote> } approach to estimate the short-run causalities. The causality test results are presented in Table 5. The results on developed economies show that the stock market capitalization, education and trade openness Granger causes income inequalities. Similarly, the short-run causalities for the emerging market economies display significant feedback causal relationship between stock market capitalization and income inequality, and between stock market total value traded and income inequality. The findings also show

unidirectional causality that runs from banking credit and per capita income to inequality. Given the findings of short-run causalities, we can argue that the stock market indicators effect income inequality in developed economies, while there is a considerable bidirectional relationship between stock market indicators and income inequalities in emerging economies. The banking credit also has a substantial influence on income inequality in the short-run. Overall, these findings confirm that the stock market indicator drives inequality in developed countries whereas they influence each other in emerging countries.

[Insert Table 5 here]

4.4 Robustness check

This section of the paper mainly aims to see how the relationship exist between financial indicators and income inequality when we combine both the developed and emerging market economies into a single panel data set. Hence, we construct a panel data set by combining developed and emerging market economies of our sample countries. The long-run estimates, based on ARDL models, are displayed in Table 6. The results of full sample show that a 1% growth in SMC, SMTOR, SMTVT and DCPS increases income inequality by 0.095%, 0.014%, 0.027% and 0.058%, respectively. However, a 1% raise in FDI inflows reduce inequalities by 0.344%. All of the coefficients are statistically significant. These results suggest that the stock market indicators, along with banking credit, have substantial positive impact on income inequality, while FDI plays the opposite role.

[Insert Table 6 here]

The combined short-run causality test results are reported in Table 7. The causality test results imply that the stock market indicators (such as SMC and SMTVT) Granger causes income

inequalities. Further, we find bidirectional causal relationship between per capita income and inequality and one way-causation from education and trade openness to income inequalities.

Given the findings of long-run elasticities and short-run causalities, we can notice that there is a considerable variation from the individual panels (separate analysis of developed and emerging economies) and combined panel results (the developed and emerging countries together). Therefore, we argue that it is important for the researchers to divide the sample countries into developed and emerging market economies separately to understand the dynamic association between financial indicators and income inequality in a more meaningful way. To further support this argument, the nature of financial market development between developed and emerging market economies significantly varies, hence it is important to classify them into two separate groups so that we can provide more specific policy suggestions.

[Insert Table 7 here]

4.5 Discussion and policy implications

Given the findings of developed and emerging market economies, we draw important policy and practical implications. More specifically, we find that the stock markets increase income inequalities in developed market economies. There are two possible explanations for this outcome, first the economies of wealthy nations are industrialized and hence additional demand for labour from the expansion, and diversification of business in these nations tends to be skilled workers. Another possible explanation is that only high-income and/or knowledgeable individuals can share the returns earned from the stock markets. Hence, the growth of stock markets widens the income gap between the rich and the poor in developed economies. This argument is consistent with our preliminary findings, which we reported in Table 1, where we found that the income inequalities

and stock market indicators have shown significant positive growth in developed economies. This therefore implies that both income inequalities and stock market development are moving in the same direction in developed economies.

On the other hand, we find that the stock markets play a pivotal role in reducing income inequalities in emerging market economies. Given that, we argue that the stock markets might be reducing income inequalities through various channels. For instance, as emerging countries depend heavily on agriculture, additional employment opportunities created from the expansion and/or diversification of business with the help of stock markets tend to be for unskilled workers. Further, the growth of stock markets also helps the governments by providing additional tax revenue sources. These tax revenues can be used for various socio-economic development programs, e.g. creating additional employment opportunities, from which the poor individuals are usually the key beneficiaries, providing various welfare schemes, subsidies and developing important infrastructure facilities, which all will greatly assist individuals to improve their earning opportunities. In such a way, the stock markets might be helping to reduce the income inequalities in emerging economies.

Further, our findings establish that banking credit to the private sector reduces income inequalities in developed and emerging market economies. Given this finding, we argue that the banking sector might be playing an important role in providing private credit to the small firms and individuals, which might be helping those firms and individuals to establish their business activities and provide employment opportunities for the unskilled labour. Hence, the banking sector might be a key player in reducing income inequalities in developed and emerging economies. Similarly, we find that the FDI inflows into both developed and emerging market economies seem to work in favour of reducing income inequalities but in both the occasions, it is statistically insignificant.

Finally, our findings on control variables such as per capita income, education and trade openness indicate that the growth in per capita income reduces income inequality in developed economies, while it increases in emerging market economies. Likewise, the growth in primary education and trade openness raise income disparity both in developed and emerging economies. Based on these results, we suggest that the growth in economic prosperity is much better distributed among the individuals in developed economies than the emerging economies. This might be true due to higher institutional quality in developed economies. On the other hand, the growth in educational qualification might be assisting individuals to earn more income than the uneducated or very low educated individuals. Hence, the income disparity between educated and uneducated/very low educated is widening across developed and emerging economies. Finally, the growth in trade openness might also be helping a particular section of the society or individuals. Consequently, the trade openness also improves income inequality in developed and emerging economies.

Given these explanations, we argue that the policy makers and government officials of both the developed and emerging market economies should realize the role that the stock markets play towards income distribution in those countries. More specifically, the policy makers of the developed economies should frame the policies, which should aim to improve the income distribution to all sections of the individuals instead of a particular section. If the policy makers fail to pay attention in regards to the growth of stock market and income distribution policies then these countries will witness further increase in income inequalities. On the other hand, the policy makers of the emerging market economies should continue to frame the policies, which can help their stock market to grow further, in order to improve income distribution in their respective economies.

Further, our findings established that the banking credit is one of the important financial indicators, which is playing a significant role in reducing income disparities across the developed and emerging market economies. Hence, the policy makers have to initiate additional policies to liberalize the banking services and funding, e.g. relaxing credit constrains to poor individuals and private firms, which may utilize low-skilled workers and improve their earning opportunities. Similarly, the policy makers should continue to use the FDI inflows for the expansion of the economies activities, which will eventually help to increase income distribution among the individuals. Finally, we suggest that the policy makers have to be cautious while developing the policies related to the FDI inflows and financial development to avoid the regional disparities in economic growth and employment opportunities; otherwise, it can increase the income inequalities instead of reducing it within the regions as well as at the national level.

5. Conclusion

The increasing globalization for the last three decades has provided an opportunity to move the resources (goods, services, and capital) across the national boundaries. The mobilization of resources has provided enormous opportunities for the expansion of economic activities, investment diversification and employment opportunities. However, it has further increased the income disparity between the rich and poor individuals of the society. Therefore, the issue of income inequality became a growing concern in both the developed and emerging market economies in the recent past. Given this background, the present research aimed to examine the effects of stock market development, banking credit and FDI inflows on income inequalities across the panels of developed and emerging market economies. The study utilized annual data that ranges from 1981 to 2014 on 20 developed and 18 emerging economies around the world. The

robust panel ARDL method and heterogeneous non-causality test are employed for the empirical investigation.

The findings of ARDL models on long-run estimates for the developed economies showed that the stock market indicators (such as market capitalization, turnover ratio and total value traded), significantly increase the income inequalities, while banking credit reduces. To the contrary, the growth of stock markets and banking credit played an important role to decrease income inequalities in emerging economies. Finally, the results of short-run causalities indicated that the stock market indicator Granger causes income inequalities in developed economies, while we found feedback relationship between stock market indicators and income inequalities in emerging market economies.

Given the findings of our study, we summarize the following policy implications and contributions. i) The policy makers of developed economies should realize that the growth in stock markets is not in favour of reducing income inequalities. Hence, they need to re-frame the policies in such a way that the growth in stock markets should be an opportunity for all walks of people to be benefited, otherwise, it will continue to have an adverse effect on the income distribution in the developed economies. ii) While, the policy makers of the emerging market economies should continue to use the policies, which were aimed to expand the stock market development as they have been effectively working in favour of reducing income inequalities. iii) The banking credit is one of the important financial indicators, which continues to assist both the developed and emerging market economies to fight the growth in income disparity. Therefore, the policy makers continue to liberalize the banking regulations so that the poor people and small firms can continue to make use of banking credit, which helps them to improve their earning opportunities and creating additional employment to the local community. Consequently, the banking sector can play

an important role to reduce the income disparities. iv) The policy makers also should develop effective policies to make use of FDI inflows for the expansion of economic activities, which can create additional employment opportunities for the locals and unskilled labour. In such a way, the FDI inflows can help both the developed and emerging market economies to reduce the income disparities. Finally, v) this study contributes to the literature by addressing the role of stock market development on income inequalities and applying robust panel econometric techniques. Overall, we suggest that the findings of this study have unique contribution to the policy and empirical literature.

Our empirical findings are consistent with the previous studies such as **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Gimet</Author><Year>2011</Year><RecNum>1008</RecNum><DisplayText>Gimet and Lagoarde-Segot (2011)</DisplayText><record><rec-number>1008</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477062151">1008</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Gimet, Céline</author><author>Lagoarde-Segot, Thomas</author></authors></contributors><titles><title>A closer look at financial development and income distribution</title><secondary-title>Journal of Banking & Finance</secondary-title></titles><periodical><full-title>Journal of banking & finance</full-title></periodical><pages>1698-1713</pages><volume>35</volume><number>7</number><keywords><keyword>Finance</keyword><keyword>Income

distribution</keyword><keyword>SVAR</keyword></keywords><dates><year>2011</year><pub-dates><date>7//</date></pub-dates></dates><isbn>0378-4266</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S0378426610004401</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.jbankfin.2010.11.011</electronic-resource-num></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Agnello</Author><Year>2012</Year><RecNum>997</RecNum><DisplayText>Agnello et al. (2012)</DisplayText><record><rec-number>997</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476803009">997</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Agnello, Luca</author><author>Mallick, Sushanta K</author><author>Sousa, Ricardo M</author></authors></contributors><titles><title>Financial reforms and income inequality</title><secondary-title>Economics Letters</secondary-title></titles><periodical><full-title>Economics Letters</full-title></periodical><pages>583-587</pages><volume>116</volume><number>3</number><dates><year>2012</year></dates><isbn>0165-1765</isbn><urls></urls></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Li</Author><Year>2014</Year><RecNum>1013</RecNum><DisplayText>Li and Yu (2014)</DisplayText><record><rec-number>1013</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477110398">1013</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Li, Jie</author><author>Yu,

Han</author></authors></contributors><titles><title>Income inequality and financial reform in Asia: the role of human capital</title><secondary-title>Applied Economics</secondary-title></titles><periodical><full-title>Applied economics</full-title></periodical><pages>2920-2935</pages><volume>46</volume><number>24</number><dates><year>2014</year></dates><isbn>0003-6846</isbn><urls></urls></record></Cite></EndNote>**}**, specifically on the role of stock markets on income inequality in the emerging economies. Similarly, our findings are also consistent with that of **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Roine</Author><Year>2009</Year><RecNum>1014</RecNum><DisplayText>Roine et al. (2009)</DisplayText><record><rec-number>1014</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477663949">1014</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Roine, Jesper</author><author>Vlachos, Jonas</author><author>Waldenström, Daniel</author></authors></contributors><titles><title>The long-run determinants of inequality: What can we learn from top income data?</title><secondary-title>Journal of Public Economics</secondary-title></titles><periodical><full-title>Journal of Public Economics</full-title></periodical><pages>974-988</pages><volume>93</volume><number>7</number><dates><year>2009</year></dates><isbn>0047-2727</isbn><urls></urls></record></Cite></EndNote>**}**, who documented that the stock markets improve income inequality in developed economies. Further, our results are in line with the studies of **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Beck</Author><Year>2007</Year><RecNum>984</RecNum><DisplayText>Beck, Demirgüç-Kunt, et al. (2007)</DisplayText><record><rec-number>984</rec-

number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1476677350">984</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Beck, Thorsten</author><author>Demirgüç-Kunt, Asli</author><author>Levine, Ross</author></authors></contributors><titles><title>Finance, inequality and the poor</title><secondary-title>Journal of economic growth</secondary-title></titles><periodical><full-title>Journal of Economic Growth</full-title></periodical><pages>27-49</pages><volume>12</volume><number>1</number><dates><year>2007</year></dates><isbn>1381-4338</isbn><urls></urls></record></Cite></EndNote> **}** , **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Hamori</Author><Year>2012</Year><RecNum>1012</RecNum><DisplayText>Hamori and Hashiguchi (2012)</DisplayText><record><rec-number>1012</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1477109009">1012</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Hamori, Shigeyuki</author><author>Hashiguchi, Yoshihiro</author></authors></contributors><titles><title>The effect of financial deepening on inequality: Some international evidence</title><secondary-title>Journal of Asian Economics</secondary-title></titles><periodical><full-title>Journal of Asian Economics</full-title></periodical><pages>353-359</pages><volume>23</volume><number>4</number><keywords><keyword>Financial deepening</keyword><keyword>Inequality</keyword><keyword>Equalizing

effect</keyword><keyword>Dynamic GMM</keyword></keywords><dates><year>2012</year><pub-dates><date>8//</date></pub-dates></dates><isbn>1049-0078</isbn><urls><related-urls><url>http://www.sciencedirect.com/science/article/pii/S1049007812000024</url></related-urls></urls><electronic-resource-num>http://dx.doi.org/10.1016/j.asieco.2011.12.001</electronic-resource-num></record></Cite></EndNote> **}** and **{** ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Jauch</Author><Year>2016</Year><RecNum>1210</RecNum><DisplayText>Jauch and Watzka (2016)</DisplayText><record><rec-number>1210</rec-number><foreign-keys><key app="EN" db-id="5zds0ppzwpstz8ewwsxx5aeexp0pwdr2axvt" timestamp="1533799632">1210</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Jauch, Sebastian</author><author>Watzka, Sebastian</author></authors></contributors><titles><title>Financial development and income inequality: a panel data approach</title><secondary-title>Empirical Economics</secondary-title></titles><periodical><full-title>Empirical Economics</full-title></periodical><pages>291-314</pages><volume>51</volume><number>1</number><dates><year>2016</year></dates><publisher>Springer</publisher><isbn>0377-7332</isbn><urls></urls></record></Cite></EndNote>**}**, who established that the banking credit helps to reduce the income inequality across the economies. However, our study is significantly different from those of the previous studies in terms of empirical methodology, sample countries and time period. Finally, the future studies may look at the effect of stock market indicators on income inequality at the regional level and may also consider of incorporating other potential

determinants of income inequality such as institutional quality and globalization in the model. This will therefore add further value to the body of knowledge.

References

{ ADDIN EN.REFLIST **}**

Table 1: Compounded annual growth rates

Country	GINI	PI	PRI	TO	SMC	SMTOR	SMTVT	DCPS	FDI
Developed market economies									
Australia	0.36	1.73	0.70	0.85	2.84	4.33	7.90	4.61	2.58
Austria	0.31	1.64	-0.59	1.20	7.26	4.91	12.33	0.51	-0.49
Canada	0.37	1.44	0.03	0.90	1.76	7.57	9.55	1.44	11.46
Denmark	0.38	1.52	0.25	1.19	6.31	12.99	21.19	5.08	5.31
Finland	0.75	1.83	-0.23	0.84	7.86	9.21	18.42	2.11	7.50
France	0.05	1.28	-0.30	0.82	7.60	3.09	11.04	0.92	3.18
Germany	0.44	1.20	-0.74	2.52	3.86	-2.03	1.83	-0.28	8.52
Israel	0.52	1.99	1.61	-1.64	4.40	1.19	7.82	0.37	5.28
Italy	0.26	0.45	-0.49	1.61	1.97	6.87	9.44	2.37	5.61
Japan	0.99	1.71	-1.66	0.25	2.08	1.93	4.69	0.92	-199.57
Netherlands	0.08	1.58	-0.25	1.13	5.67	3.62	9.59	2.03	7.12
New Zealand	0.57	1.13	0.22	-0.16	1.67	2.97	-2.33	7.21	-11.81
Norway	0.03	2.35	0.37	-0.30	10.54	15.09	26.48	3.98	4.64
Portugal	0.39	1.14	-1.79	0.81	2.89	4.41	8.15	4.09	2.69
Singapore	0.15	3.95	0.10	-0.30	0.50	1.69	2.82	1.58	1.93
Spain	0.27	1.62	-0.62	1.44	5.13	7.05	13.28	2.29	2.94
Sweden	0.78	1.60	0.29	1.16	6.66	3.25	11.74	3.91	1.94
Switzerland	-0.11	0.94	0.21	0.97	5.56	-4.09	1.32	1.59	4.85
United Kingdom	0.55	1.87	-0.11	0.56	5.14	3.13	7.50	4.52	2.33
United States	0.35	1.64	0.54	1.31	3.79	4.78	8.53	2.36	1.24
Average	0.37	1.63	-0.12	0.76	4.67	4.60	9.56	2.58	-6.64
Emerging market economies									
Brazil	-0.53	1.33	-0.36	2.10	9.41	-1.62	16.34	-2.45	10.93
Chile	-0.31	3.46	-0.24	-0.01	4.69	0.17	2.95	3.15	2.52
China	1.23	8.74	-1.06	1.75	13.94	1.63	18.12	2.16	-0.09
Colombia	-0.10	2.12	0.27	0.21	11.65	2.01	12.90	2.18	5.07
Egypt	-0.27	2.07	2.13	-1.37	7.20	6.88	14.06	0.08	-0.28
Greece	0.02	0.53	-1.14	1.95	6.13	5.79	8.91	4.98	0.71
Hungary	-0.06	2.18	-1.02	5.00	9.91	8.05	15.97	1.30	3.81
India	0.52	4.42	1.59	5.89	10.02	-1.68	10.56	2.93	14.80
Indonesia	1.00	3.23	-0.04	-0.04	14.44	-2.11	14.98	0.21	5.38
Korea	-0.38	5.44	-2.12	1.20	9.25	0.44	11.17	3.83	6.21
Malaysia	-0.37	3.24	1.43	1.12	2.73	3.66	5.88	1.46	0.64
Mexico	0.22	0.80	-0.16	2.92	10.58	-2.77	9.37	2.57	2.87
Peru	-0.55	3.15	-0.39	1.87	13.82	-7.01	9.48	4.23	13.79
Philippines	0.10	1.74	1.50	0.44	6.33	-2.26	1.13	2.77	-0.12
Poland	0.85	4.10	-2.73	3.63	27.42	-4.40	19.88	4.42	-6.83
South Africa	0.12	1.16	-0.13	2.02	2.06	7.99	10.01	2.14	8.08
Thailand	-0.68	3.59	-1.42	2.87	3.94	1.34	5.47	2.63	-5.51
Turkey	-0.58	2.42	-0.73	2.21	8.38	8.15	20.52	5.94	3.64
Average	0.01	2.98	-0.26	1.88	9.55	1.35	11.54	2.47	3.65

Note: Growth rates were calculated using original data.

Table 2: Summary statistics on the selected developed and emerging market economies

Country	GINI	PI	PRI	TO	SMC	SMTOR	SMTVT	DCPS	FDI
Developed market economies									
Australia	30.79	41634.34	1810.92	37.18	76.02	52.73	45.71	79.96	2.49
Austria	26.70	38701.47	363.01	80.58	17.36	41.69	7.91	89.32	2.29
Canada	29.53	39233.29	2343.43	62.52	102.77	36.41	38.87	108.32	2.19
Denmark	23.06	50364.78	391.65	77.99	40.59	48.07	24.16	91.55	2.07
Finland	23.07	36847.67	377.67	64.48	63.69	58.31	50.37	68.02	2.23
France	28.76	35396.21	4100.90	48.44	46.17	61.31	33.58	83.40	1.62
Germany	27.74	38458.08	3412.69	62.77	38.39	122.06	47.25	99.61	1.87
Israel	34.35	25427.28	673.35	74.60	50.19	41.50	19.92	66.46	2.31
Italy	32.88	34673.87	2870.62	46.60	30.63	101.36	34.38	68.70	0.69
Japan	29.38	38707.32	8843.26	22.55	73.09	72.06	53.62	183.56	0.10
Netherlands	25.30	41350.58	1210.94	117.55	70.17	67.58	54.56	93.69	12.95
New Zealand	34.45	28938.30	340.37	57.77	38.83	21.66	8.23	94.53	2.59
Norway	23.99	68939.41	363.09	71.23	29.14	56.30	16.66	58.60	1.50
Portugal	34.09	20351.91	827.46	65.10	30.18	53.43	17.68	106.16	3.25
Singapore	40.75	30390.90	279.68	354.80	152.75	48.66	74.33	92.22	13.61
Spain	32.22	26496.75	2766.28	48.92	82.46	74.30	64.09	106.45	2.65
Sweden	22.01	42087.10	650.53	72.21	69.39	69.87	57.59	67.60	3.49
Switzerland	29.51	65269.70	466.37	93.99	144.57	126.82	129.72	145.68	2.71
United Kingdom	32.68	32606.98	4535.00	51.74	101.23	58.23	59.36	117.06	3.12
United States	35.57	41176.94	23211.86	22.87	92.45	123.86	125.76	148.17	1.26
Average	29.80	39047.94	3101.29	78.09	69.57	66.72	49.92	99.19	3.37
Emerging market economies									
Brazil	49.47	9369.98	19409.43	22.10	33.52	71.32	17.99	51.47	2.36
Chile	49.72	10307.51	1652.03	63.98	90.36	11.77	11.16	72.40	6.04
China	45.93	2809.47	117527.95	45.28	33.53	163.86	50.71	111.35	3.93
Colombia	50.61	5354.67	4947.49	35.78	27.14	11.22	3.71	34.67	3.02
Egypt	49.31	2101.32	8722.91	50.30	31.24	29.26	12.31	38.71	2.29
Greece	33.69	23610.95	681.88	48.84	36.63	45.61	19.97	61.33	0.75
Hungary	28.85	11455.79	450.89	123.40	18.30	63.86	13.66	39.22	8.97
India	45.24	835.84	117870.40	30.63	43.13	101.74	27.69	32.15	1.00
Indonesia	36.32	2478.82	29585.41	56.62	25.16	40.90	8.66	35.58	1.11
Korea	30.82	13449.71	4273.02	69.06	42.40	147.77	66.07	80.78	0.72
Malaysia	40.66	6488.56	2830.53	168.90	132.70	24.56	30.58	110.43	3.94
Mexico	46.43	8132.07	14751.93	47.28	22.74	46.67	7.02	19.90	2.17
Peru	50.62	3842.69	3979.53	40.28	28.34	17.47	3.32	22.07	3.68
Philippines	42.47	1724.98	12266.95	83.24	46.75	22.55	11.44	32.07	1.48
Poland	30.11	9436.20	3105.05	64.88	19.34	60.84	7.61	29.81	3.16
South Africa	57.12	6388.19	7507.11	51.89	173.92	21.96	37.50	127.33	1.30
Thailand	40.61	3756.97	6101.86	107.00	51.48	76.33	36.52	110.61	2.87
Turkey	40.76	8421.56	6557.20	46.06	20.79	141.42	27.11	28.40	1.16
Average	42.56	7420.85	19038.07	64.61	48.54	61.72	22.27	57.47	2.72

Notes: Summary statistics were calculated using original data; PRI was reported in thousands, while all other variables were measured as defined in the data section.

Table 3: Results of panel unit root tests

		Developed market economies				Emerging market economies			
		Level		First difference		Level		First difference	
Variable	Method	LLC	IPS	LLC	IPS	LLC	IPS	LLC	IPS
GINI	Statistic	-3.639***	-3.206***	-6.463***	-9.808***	1.329	0.832	-3.820***	-7.959***
	Prob.	0.000	0.001	0.000	0.000	0.908	0.797	0.000	0.000
PI	Statistic	-6.754***	-0.959	-12.210***	-11.285***	-1.289	5.056	-9.384***	-9.197***
	Prob.	0.000	0.169	0.000	0.000	0.099	1.000	0.000	0.000
PRI	Statistic	-5.340***	-1.865***	-6.058***	-7.788***	-2.827***	0.627	-7.317***	-7.491***
	Prob.	0.000	0.031	0.000	0.000	0.002	0.735	0.000	0.000
TO	Statistic	-0.110	1.831	-19.183***	-18.444***	-2.009**	-0.133	-15.100***	-14.798***
	Prob.	0.456	0.967	0.000	0.000	0.022	0.447	0.000	0.000
SMC	Statistic	-5.965***	-4.594***	-12.206***	-13.255***	-9.460***	-7.591***	-8.872***	-9.412***
	Prob.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SMTOR	Statistic	-5.197***	-4.700***	-17.636***	-16.810***	-3.494***	-4.139***	-20.252***	-19.089***
	Prob.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SMTVT	Statistic	-5.020***	-3.940***	-10.625***	-9.863***	-6.805***	-6.225***	-6.092***	-8.568***
	Prob.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
DCPS	Statistic	-5.180***	-1.748**	-13.145***	-13.797***	-0.223	1.179	-10.011***	-9.990***
	Prob.	0.000	0.040	0.000	0.000	0.412	0.881	0.000	0.000
FDI	Statistic	-7.517***	-7.254***	-21.641***	-26.570***	-3.681***	-4.650***	-18.244***	-19.238***
	Prob.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: Panel unit root tests were estimated using constant in the models; ** and *** indicate the rejection of the null hypothesis of a unit root at the 5% and 1% significance levels, respectively.

Table 4: Results of long-run elasticities on income inequalities

	GINI = f (PI, PRI, TO, SMC)		*GINI = f (PI, PRI, TO, SMTOR)*		*GINI = f (PI, PRI, TO, SMTVT)*		*GINI = f (PI, PRI, TO, DCPS)*		*GINI = f (PI, PRI, TO, FDI)*	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Developed market economies										
PI	-0.168***	0.000	-0.008	0.595	-0.045***	0.003	-0.035**	0.020	-0.032**	0.028
PRI	0.050	0.142	0.042**	0.022	0.071**	0.042	0.190***	0.000	0.166***	0.000
TO	0.188***	0.000	0.120***	0.000	0.189***	0.000	0.333***	0.000	0.353***	0.000
SMC	0.085***	0.000								
SMTOR			0.035***	0.000						
SMTVT					0.018***	0.000				
DCPS							-0.057*	0.075		
FDI									-0.037	0.316
Emerging market economies										
PI	0.134***	0.000	0.174***	0.000	0.123***	0.000	0.126***	0.000	0.154***	0.000
PRI	0.156***	0.000	0.138***	0.000	0.154***	0.000	0.149***	0.000	0.160***	0.000
TO	0.028*	0.057	0.064*	0.061	0.053***	0.008	0.152***	0.000	0.019	0.196
SMC	-0.022***	0.001								
SMTOR			-0.094***	0.000						
SMTVT					-0.021***	0.000				
DCPS							-0.097***	0.000		
FDI									-0.086	0.356

Notes: *, ** and *** indicate the significance levels at 10%, 5% and 1%, respectively; the appropriate lag length was chosen based on AIC method.

Table 5: Short-run heterogeneous causalities among the variables

	Developed economies		Emerging economies	
Null Hypothesis:	Zbar-Stat.	Prob.	Zbar-Stat.	Prob.
SMC does not homogeneously cause GINI	-1.653*	0.098	2.607***	0.009
GINI does not homogeneously cause SMC	0.890	0.374	-1.821*	0.069
SMTOR does not homogeneously cause GINI	-1.001	0.317	-0.236	0.814
GINI does not homogeneously cause SMTOR	-0.179	0.858	-0.279	0.780
SMTVT does not homogeneously cause GINI	-0.859	0.391	1.888*	0.059
GINI does not homogeneously cause SMTVT	0.064	0.949	-1.996**	0.046
DCPS does not homogeneously cause GINI	1.135	0.257	4.338***	0.000
GINI does not homogeneously cause DCPS	-0.726	0.468	1.538	0.124
FDI does not homogeneously cause GINI	-1.170	0.242	-1.249	0.212
GINI does not homogeneously cause FDI	0.281	0.779	-0.774	0.439
PI does not homogeneously cause GINI	0.318	0.751	2.103**	0.036
GINI does not homogeneously cause PI	0.131	0.896	0.627	0.531
PRI does not homogeneously cause GINI	3.157***	0.002	1.456	0.146
GINI does not homogeneously cause PRI	-0.014	0.989	0.414	0.679
TO does not homogeneously cause GINI	1.652*	0.099	1.088	0.277
GINI does not homogeneously cause TO	-0.475	0.635	0.186	0.853

Note: *, ** and *** indicate the rejection of the null hypothesis of no causality at the 10%, 5% and 1% significance levels, respectively.

Table 6: The long-run elasticities on income inequalities (full sample)

	GINI = f (PI, PRI, TO, SMC)		*GINI = f (PI, PRI, TO, SMTOR)*		*GINI = f (PI, PRI, TO, SMTVT)*		*GINI = f (PI, PRI, TO, DCPS)*		*GINI = f (PI, PRI, TO, FDI)*	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
PI	-0.329***	0.000	0.053***	0.000	-0.027***	0.002	-0.505***	0.000	0.160***	0.000
PRI	0.104***	0.001	0.027***	0.000	0.010*	0.096	0.223***	0.000	0.175***	0.000
TO	0.335***	0.000	0.116***	0.000	0.096***	0.000	0.583***	0.000	-0.118***	0.000
SMC	0.095***	0.000					0.058***	0.003	-0.344***	0.000
SMTOR			0.014***	0.000						
SMTVT					0.027***	0.000				
DCPS							0.058***	0.003		
FDI									-0.344***	0.000

Notes: *, ** and *** indicate the significance levels at 10%, 5% and 1%, respectively; the appropriate lag length was chosen based on AIC method.

Table 7: Short-run heterogeneous causalities among the variables (full sample)

Null Hypothesis:	Zbar-Stat.	Prob.
SMC does not homogeneously cause GINI	2.387**	0.017
GINI does not homogeneously cause SMC	-1.575	0.115
SMTOR does not homogeneously cause GINI	-0.074	0.941
GINI does not homogeneously cause SMTOR	-0.467	0.640
SMTVT does not homogeneously cause GINI	2.278**	0.023
GINI does not homogeneously cause SMTVT	-0.472	0.637
DCPS does not homogeneously cause GINI	0.271	0.786
GINI does not homogeneously cause DCPS	1.315	0.189
FDI does not homogeneously cause GINI	-1.581	0.114
GINI does not homogeneously cause FDI	-0.894	0.371
PI does not homogeneously cause GINI	2.924***	0.004
GINI does not homogeneously cause PI	1.811*	0.070
PRI does not homogeneously cause GINI	2.364**	0.018
GINI does not homogeneously cause PRI	-0.102	0.918
TO does not homogeneously cause GINI	1.940*	0.052
GINI does not homogeneously cause TO	-0.207	0.836

Note: *, ** and *** indicate the rejection of the null hypothesis of no causality at the 10%, 5% and 1% significance levels, respectively.

Appendix-1: Descriptive statistics of the developed and emerging market economies

	GINI	PI	PRI	TO	SMC	SMTOR	SMTVT	DCPS	FDI
Developed market economies									
Mean	29.80	39047.94	3101286.00	78.09	69.57	66.72	49.92	99.19	3.37
Maximum	42.23	89912.13	25297600.00	439.66	265.13	350.59	313.59	227.75	87.44
Minimum	16.60	14039.44	251097.00	15.92	2.06	1.02	0.08	23.51	-5.64
Std. Dev.	5.22	13257.27	5338463.00	71.11	51.63	52.45	53.69	43.20	6.29
Skewness	0.10	0.99	3.06	3.29	1.33	1.95	1.70	0.68	6.16
Kurtosis	2.60	4.35	11.87	13.87	4.81	8.60	6.13	2.85	64.01
Jarque-Bera	5.17	146.54	2966.02	4120.80	265.22	1187.24	544.81	47.63	98799.60
Probability	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emerging market economies									
Mean	42.56	7420.85	19038072.00	64.61	48.54	61.72	22.27	57.47	2.72
Maximum	59.66	30056.68	140000000.00	220.41	265.56	347.57	160.45	166.50	50.74
Minimum	26.25	524.09	384834.00	14.39	0.18	1.58	0.16	9.41	-16.07
Std. Dev.	8.16	5832.36	34093940.00	39.85	47.38	60.55	27.52	39.56	3.95
Skewness	-0.18	1.53	2.54	1.77	1.99	1.74	2.43	0.91	7.18
Kurtosis	2.01	5.54	8.00	6.05	7.41	6.11	9.90	2.56	86.75
Jarque-Bera	21.02	302.03	968.23	417.71	672.65	415.72	1361.29	66.84	137784.80
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: The descriptive statistics were calculated using before log conversion data.